ORDER NO. SIMMC 0001002C1
E1

Service Manual

Microwave Oven

MODELS	APH	CPH
	USA	Canada
NN-S560BF/WF	O	O
NN-S550BF/WF	O	O
NN-S540BF/WF	O	
NN-L530BF	O	
NN-L530WF	O	O
NN-L520WF		O
NN-S510WF		O

* **RPH Model refer to the last page.**

Specifications for APH :

Specifications: / Model:	NN-S560BF/WF	NN-S550BF/WF	NN-S540BF/WF	NN-L530BF/WF
Power Source:	*120V AC Single Phase, 60Hz			
Power Requirement:	1370W	1370W	1370W	1370W
Output(IEC705-88):	1300W	1300W	1100W	1000W
Microwave Frequency:	*2450MHz			
Timer:	*99min.99sec			
Outside Dimensions:	*20 ”(518mm)(W)◦ × 16 ”(407mm)(D)◦ × 11”(301mm)(H)			
Oven Cavity Dimensions:	*14 ”(375mm)(W)◦ × 15 ”(386mm)(D)◦ × 8 ”(225mm)(H)			
Weight:	*26.5 lbs. (12.0kg)			
Output power:IEC705-88 Test Procedure				
Specifications subject to change without notice.				

Specifications for CPH:

Specifications: / Model:	NN-S560BF/WF	NN-S540BF/WF	NN-L530WF	NN-L520WF	NN-S510WF
Power Source:	*120V AC Single Phase, 60Hz				
Power Requirement:	1370W	1370W	1370W	1370W	1370W
Output(IEC705-88):	1200W	1100W	1100W	1100W	1000W
Microwave Frequency:	*2450MHz				
Timer:	*99min.99sec				
Outside Dimensions:	*20 ”(518mm)(W)◦ × 16 ”(407mm)(D)◦ × 11”(301mm)(H)				
Oven Cavity Dimensions:	*14 ”(375mm)(W)◦ × 15 ”(386mm)(D)◦ × 8 ”(225mm)(H)				
Weight:	*26.5 lbs. (12.0kg)				
Output power:IEC705-88 Test Procedure					
Specifications subject to change without notice.					

Panasonic®

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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

WARNING

1. This product should be serviced only by trained, qualified personnel.
2. Though this product has been manufactured in compliance with:
   "Federal Performance Standard 21 CFR Subchapter J"(D.H.H.S): U.S.A. models
   or "Radiation Emitting Devices Act"(Health and Welfare Canada): Canadian models
   it is very important all repairs should be made in accordance with procedures described in this manual to avoid being exposed to excessive microwave radiation.
3. Check for radiation leakage before and after every servicing according to the "procedure for measuring radiation leakage."
4. If the unit cannot be repaired on site, advise the customer not to use until unit is repaired.
5. Any serviceman who learns of any accident pertaining to microwave radiation leakage including the oven operating with open door should immediately notify the appropriate address listed below and Center for Devices and Radiological Health, DHHS.

IN U.S.A. (PASC)	Panasonic Services Company 50 Meadowland Parkway, Secaucus, New Jersey 07094 Attention: Technical Service Division. (201)348-7000	IN PUERTO RICO (PSC)	PSC San Gabriel Industrial Park 65th Infantry Ave. Km.9.5 Carolina, Puerto Rico 00985 (787)750-4300
		IN CANADA (PCI)	Panasonic Canada Inc. 5770 Ambler Drive, Mississauga, Ontario, L4W2T3 (905)624-5010

6. There are special components used in the microwave oven which are important for safety. These parts are marked with a ⚠ on the replacement parts list. It is essential that these critical parts should be replaced only with the manufacture's specified parts to prevent microwave leakage, shock, fire, or other hazards. Do not modify the orginal design.

PRECAUTIONS TO BE OBSERVED BEFORE AND DURING SERVICING TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY

(A) Do not operate or allow the oven to be operated with the door open.
(B) Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary:
   (1) Interlock operation
   (2) Proper door closing
   (3) Seal and sealing surfaces (arcing, wear, and other damage)
   (4) Damage to or loosening of hinges and latches.
   (5) Evidence of dropping or abuse
(C) Before turning on microwave power for any service test or inspection within the microwave generating compartments, check the magnetron, waveguide or transmission line, and cavity for proper alignment, integrity and connections.
(D) Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.
(E) A microwave leakage check to verify compliance with the Federal Performance Standard should be performed on each oven prior to release to the owner.

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DANGER OF HIGH VOLTAGE AND HIGH TEMPERATURE (HOT/LIVE) OF THE INVERTER POWER SUPPLY (U)

INVERTER WARNING

This Inverter board looks like a regular PCB. However, this PCB drives the magnetron tube with extremely high voltage and high current. **NEW HV**

IT HAS:

1. **Very high voltage and high current circuits.**
   It functions the same as the high voltage transformer and high voltage capacitor in ordinary microwave ovens.
2. **Aluminum heat sink is energized with very high voltages and high heat energy.**
3. **Very high voltage may remain in circuitry even when oven is off. High voltage may remain in the capacitors on the board.**

DO NOT:

* 1. **Do not touch circuitry because it has very hot (high voltage) circuitry. Even when replacing board, extreme care should be taken to avoid possible electric shock hazards. High voltage may remain in circuit.**

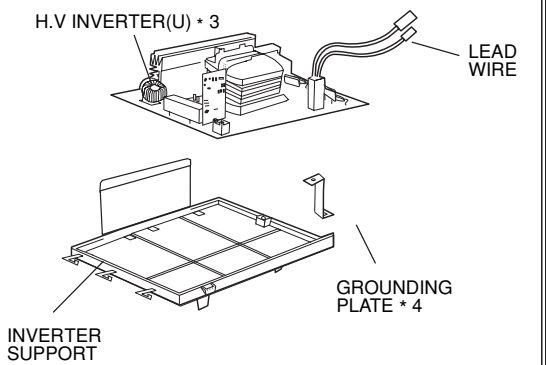
* 2. **Do not touch aluminum heat sink because it is very hot in high voltage and also very hot in high heat energy.**

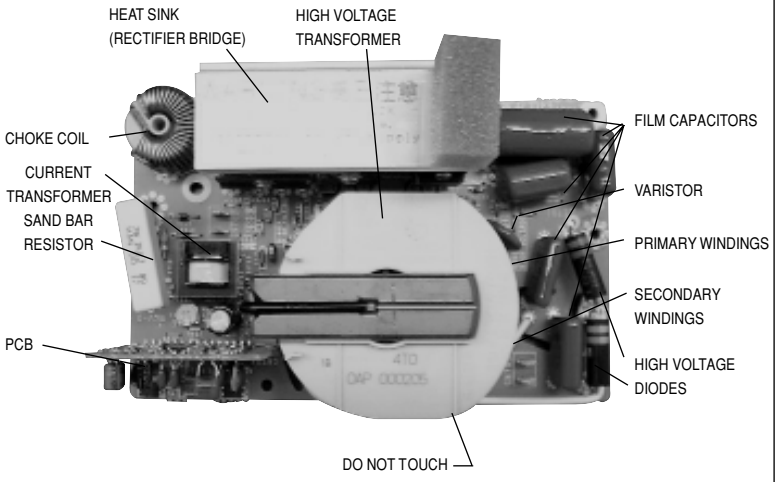
* 3. **Do not try to adjust or tamper with preset volume on the Inverter board because it is very dangerous to adjust without proper test equipment.**

* 4. **Do not test oven while Inverter grounding plate or screws are loose. It is very dangerous to operate H.V. Inverter Circuit (U) with loose mounting screws or if improperly grounded.**

* 5. **For USA only:**
   Do not try to repair Inverter PCB because it is very dangerous to repair it. Replace as whole High Voltage Inverter Circuit unit and return fully re-packed with original shipping box and shipping materials.

INVERTER POWER SUPPLY DIAGRAM



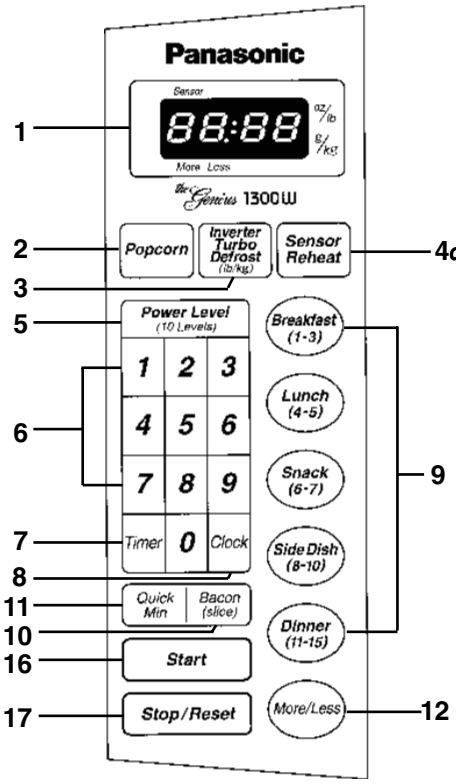


FEATURE CHART

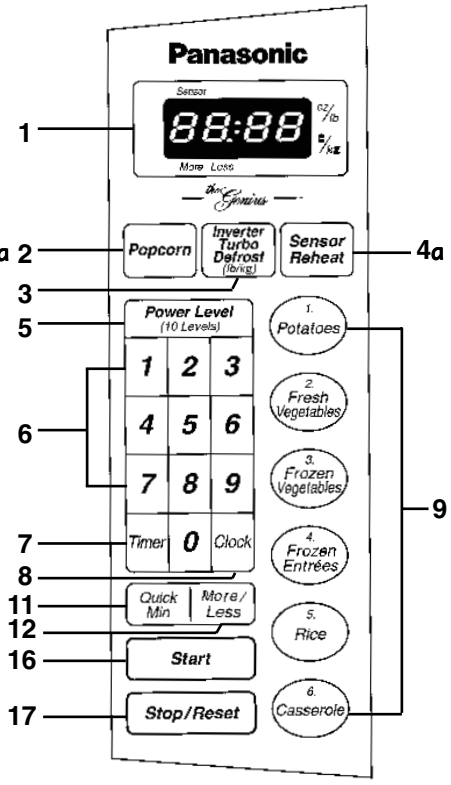
FEATURE \ MODEL	NN-S560WF	NN-S550WF NN-S540WF NN-S510WF NN-S530WF NN-S520WF
Three Stage Cooking	○	○
Inverter Turbo Defrost	○	○
Auto Reheat	—	○
Inverter Auto Cook	—	○
Sensor Reheat	○	—
Sensor Cook	○	—
Quick Min	○	○
Popcorn	○	○
Timer	○	○
Digital Clock	○	○

CONTROL PANEL

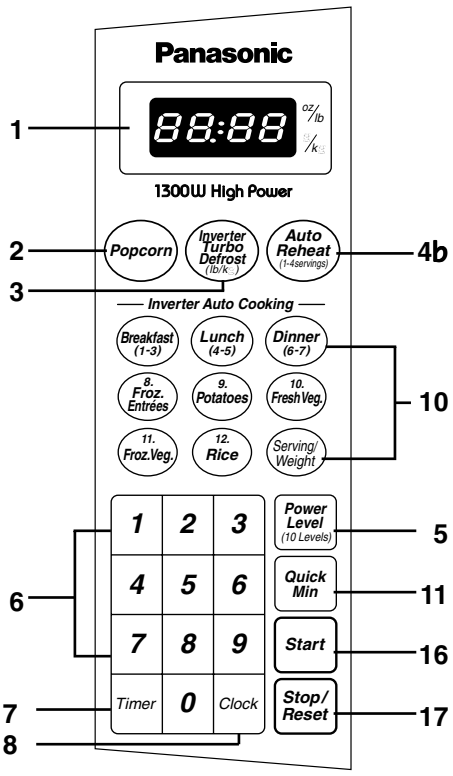
NN-S560(APH)



NN-S560(CPH)

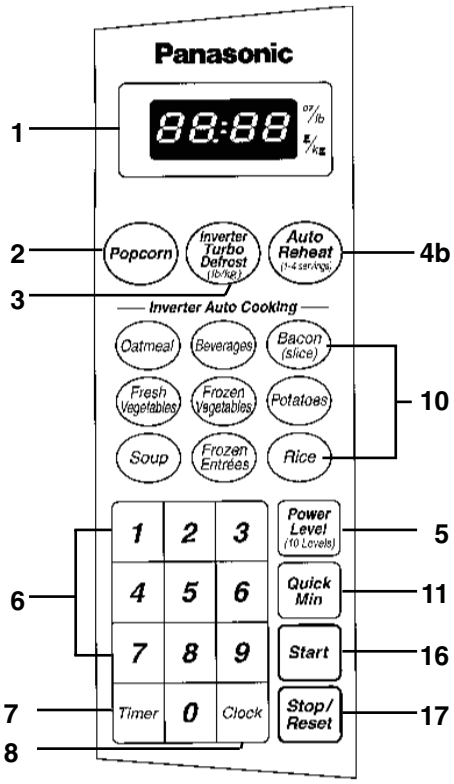


NN-S550



CONTROL PANEL

NN-S540



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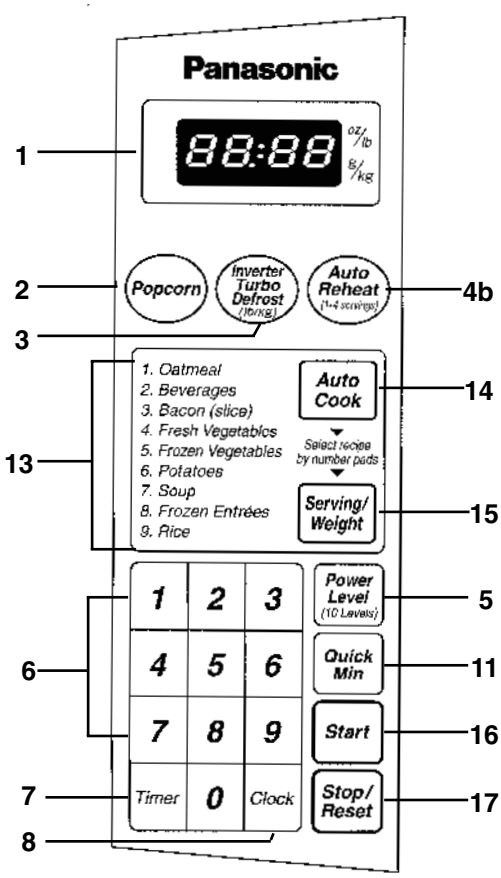

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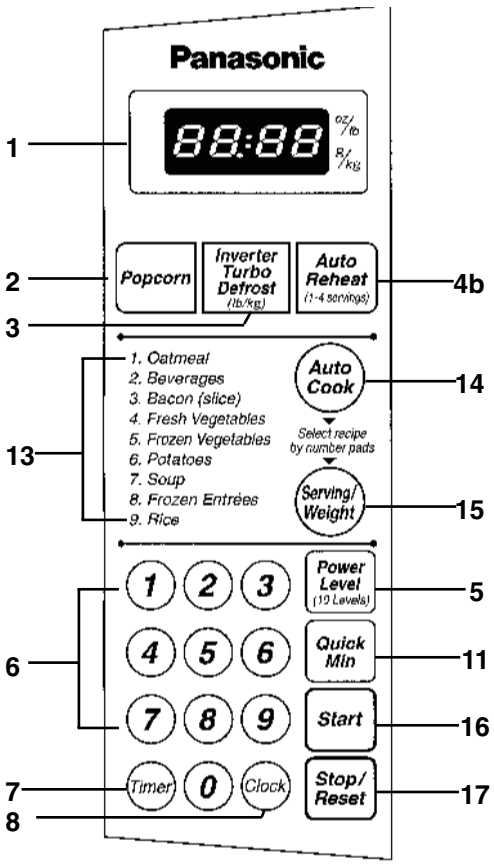
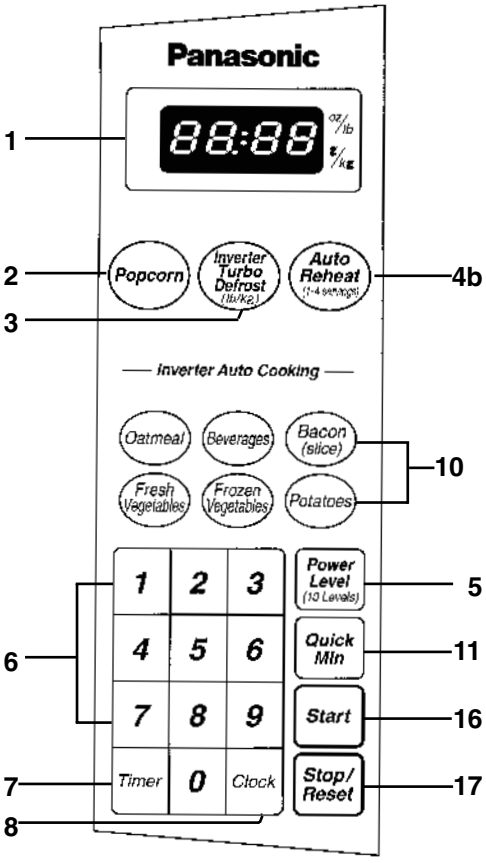


MN-S510



(1) Display Windows
(2) Popcorn Pad
(3) Inverter Turbo Defrost Pad
(4a) Sensor Reheat Pad
(4b) Auto Reheat Pad
(5) Power Level Pad
(6) Number Pads
(7) Timer Pad
(8) Clock Pad
(9) Sensor Cook Pad
(10) Inverter Auto Cooking Pads
(11) Quick Min Pad
(12) More /Less Pad
(13) Cooking Guide
(14) Auto Cook Pad
(15) Serving/Weight Pad
(16) Start Pad

One tap allows oven to begin functioning. If door is opened or STOP/RESET Pad is pressed once during oven operation, START Pad must again be pressed to restart oven.

(17) Stop/Reset Pad

Before cooking: One tap clears your instructions.
During cooking: One tap temporarily stops the cooking process. Another tap cancels all your instructions and time of day or colon appears on the display window.

OPERATION AND DIGITAL PROGRAMMER CIRCUIT TEST PROCEDURE

When you pluge the power supply cord into the wall outlet, microwave oven automatically enter into the state of lb / oz. If you want to use g / kg state, please press **Start** pad after pluging the power source.

1. To Set Clock

OPERATION	SCROLL DISPLAY
1. Plug the power supply cord into wall outlet.	88.88
2. Press **Clock** pad.	☼ ☼
3. Enter time of day (TOD) by pressing appropriate **Number** pads.	11☼25
4. Press **Clock** pad. TOD has now been resistered into the digital programmer circuit and will count up by minutes.	11. 25

2. Time Cooking for Two Stage

OPERATION	SCROLL DISPLAY
1. Place a water load in the oven.	
2. Press **Power Level** pad once to set High power. (1st stage)	P 10
3. Set for 5 seconds by pressing **Number** pads. 5 sec.= **5**	. 5
4. Press **Power Level** pad 6 times to set Medium power. (2nd stage)	P 5
5. Set for 1 minute by pressing **Number** pads. 1 min.= **1** **0** **0**	1.00
6. Press **Start** pad.	. 5
7. When 1st stage cooking time has elapsed. Oven beeps twice and automatically switches to 2nd stage cooking.	1.00
8. When 2nd stage cooking time has elapsed, oven beeps 5 times and shuts off.	Time of day or colon if set appears in the display.

3. Inverter Turbo Defrost

OPERATION	SCROLL DISPLAY
1. Press **Inverter Turbo Defrost** pad.	– ☼
2. Set the weight for 1 lb by pressing **Number** pads. 1 lb = **1** **0**	1.0 –
3. Press **Start** Pad.	4.23
4. Press **Stop/Reset** Pad twice. Oven shuts off.	Time of day or colon if set appears in the display.

4. Inverter Auto Cooking

OPERATION	SCROLL DISPLAY
1. Press **Rice** pad twice.	1
2. Press **Start** pad. Cooking begins as time counts down.	15.00
3. When cooking time has elapsed, oven beeps 5 times and shuts off.	Time of day or colon if set appers in the display.

5. Auto Cook

OPERATION	SCROLL DISPLAY
1. Press **Auto Cook** pad.	
2. Press **Number** pads. (Press 3 to select Bacon)	3

OPERATION	SCROLL DISPLAY
3. Press **Serving / Weight** pad. (Select 4. 6. 10. 14 slices)	***4***
4. Press **Start** pad.	***4.10***
When cooking time has elapsed, Oven beeps 5 times and shuts off.	Times of day or colon if set appears in the display.

6. Popcorn

OPERATION	SCROLL DISPLAY
1. Press **Popcom** pad five times for 3.5 oz serving. (Select 1.75. 2.65. 2.85. 3.0 or 3.5 oz)	***3.5***
2. Press **Start** pad. Cooking begin as times counts down.	***1.45***
When cooking time has elapsed, Oven beeps 5 times and shuts off.	Time of day or colon if set appears in the display.

7. Sensor Cooking (NN-S560WFAPH/CPH,S560BFAPH/CPH)

OPERATION	SCROLL DISPLAY
1. Pour 150 ± 15cc (4.5 ± 1/2 ozs) of room temperature water in a beaker, place the beaker in the center of the oven. Press **Breakfast** pad twice.	***– 2***
2. Press **Start** pad.	
3.The steam sensor detects steam about 1.5 to 4 minutes after the start pad is pressed. Sensor cooking (T1) automatically switches to cooking time(T2). "Sensor" disappears with beep sounds and the remainder of cooking time appears in the display window. NOTE: Cooking time will vary depending on the water temperature, the shape of the beaker or the Power source Voltage.	
4.When cooking time has elapsed, Oven beeps 5 times and shuts off.	Time of day or colon if set appears in the display.

8. Auto Reheat

OPERATION	SCROLL DISPLAY
1. Press **Auto Reheat** pad twice for two servings.	***2***
2. Press **Start** pad.Auto Reheat cycle begins time counts down.	***2.00***
3.When cooking time has elapsed, Oven beeps 5 times and shuts off.	Time of day or colon if set appears in the display.

9. Power Level

Press Power Level	Power Level	Display Window
once	P 10 (HIGH)	P 10
twics	P 9	P 9
3 times	P 8	P 8
4 times	P 7 (MED. HIGH)	P 7
5 times	P 6 (MEDIUM)	P 6
6 times	P 5	P 5
7 times	P 4	P 4
8 times	P 3 (MEDIUM-LOW)	P 3
9 times	P 2	P 2
10 times	P 1 (LOW)	P 1

10. To set Child satety Lock

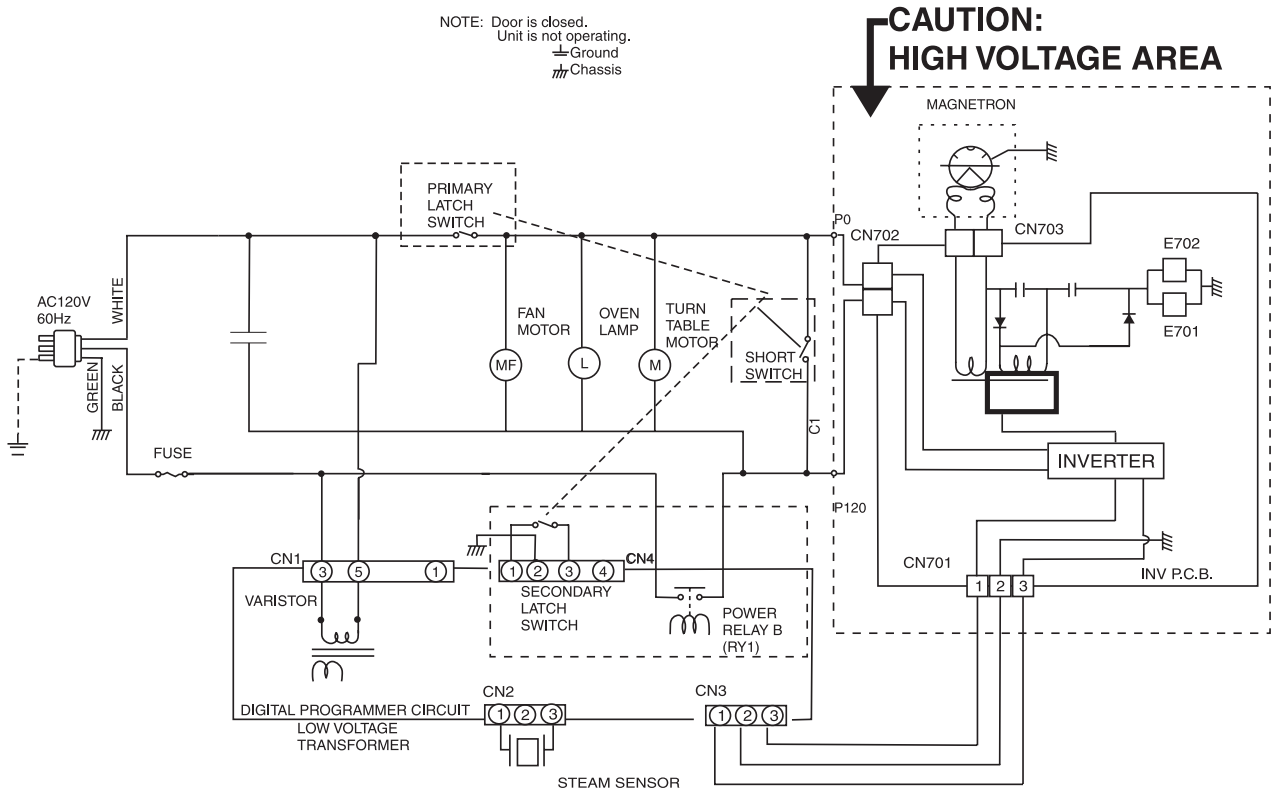
OPERATION	SCROLL DISPLAY
1. Press **Start** pad 3 times continuously. "Child" appears in the display.	***Child***

11. To Reset Child Lock

OPERATION	SCROLL DISPLAY
1. Press **Start / Reset** pad 3 times continuously.	Time of day or colon if set appears in the display.

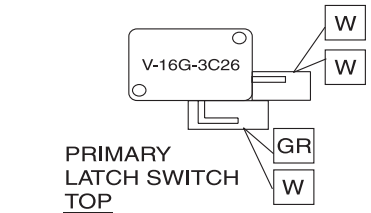
SCHEMATIC DIAGRAM (APH)

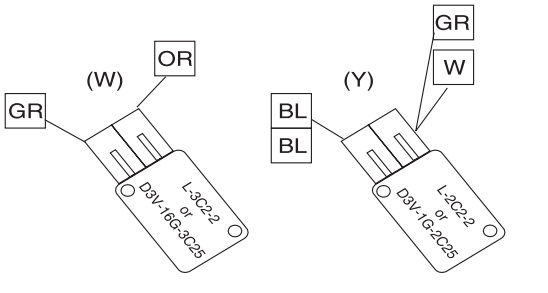
SCHEMATIC DIAGRAM (APH)

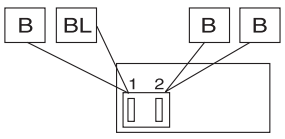


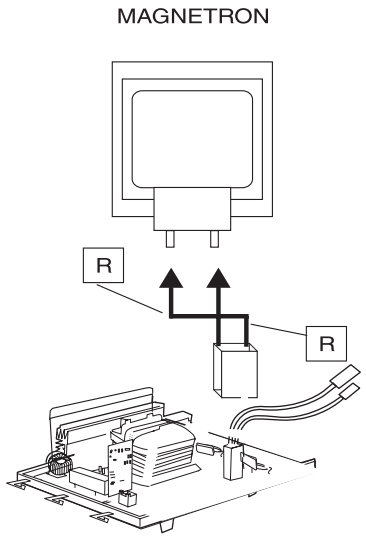
WIRING DIAGRAM (APH)

NOTE: * When replacing, check the lead wire color as shown.
***Colors shown by ( ) indicate colors of lead wire connector housing.**





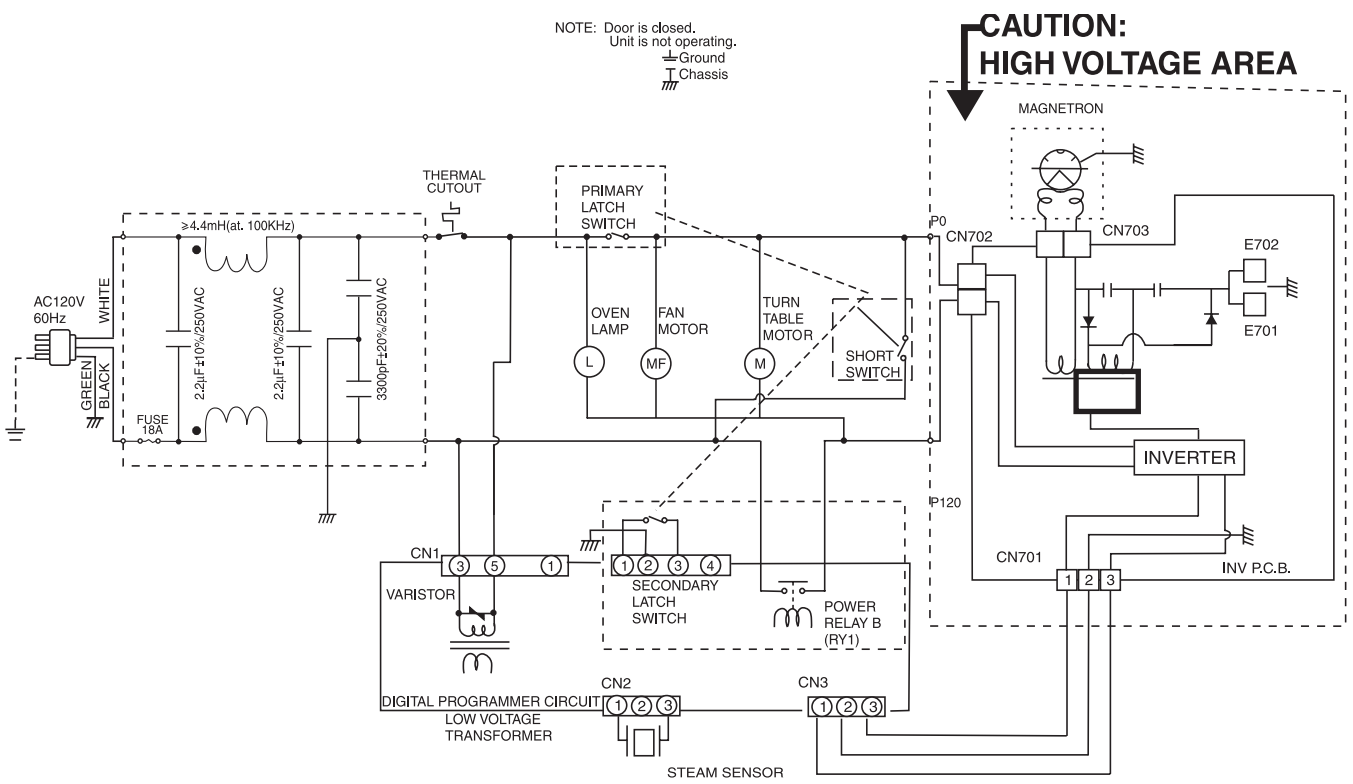




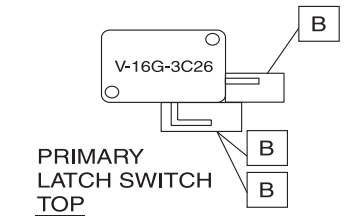
SYMBOL	COLOR
OR	ORANGE
BL	BLUE
BR	BROWN
W	WHITE
Y	YELLOW
R	RED
GR	GRAY
B	BLACK

SCHEMATIC DIAGRAM (CPH)

SCHEMATIC DIAGRAM (CPH)

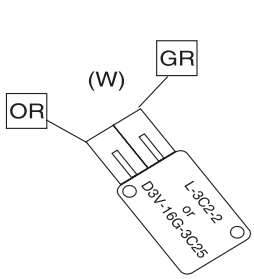


WIRING DIAGRAM (CPH)

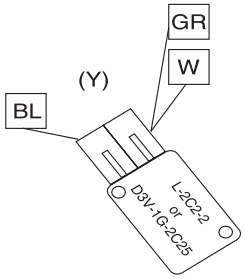


PRIMARY LATCH SWITCH TOP

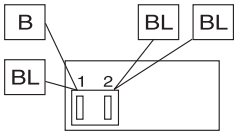
NOTE: * When replacing, check the lead wire color as shown.
***Colors shown by ( ) indicate colors of lead wire connector housing.**

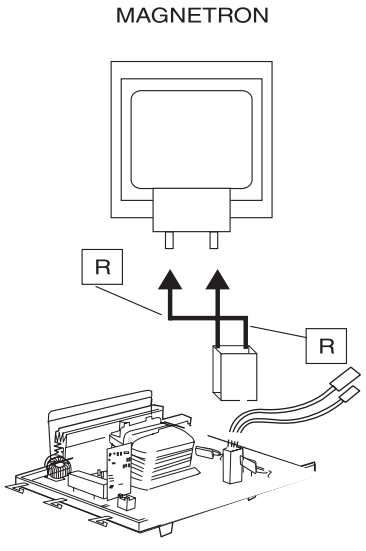


SECONDARY LATCH SWITCH BOTTOM (OUTSIDE)



SHORT LATCH SWITCH BOTTOM (INSIDE)





HIGH VOLTAGE INVERTER

SYMBOL	COLOR
OR	ORANGE
BL	BLUE
BR	BROWN
W	WHITE
Y	YELLOW
R	RED
GR	GRAY
B	BLACK

DESCRIPTION OF OPERATING SEQUENCE

1. Variable power cooking control

The coil of power relay B (RY1) is energized intermittently by the digital programmer circuit, when the oven is set at any power selection except for High power position. The digital programmer circuit controls the ON-OFF time of power relay B contacts in order to vary the output power of the microwave oven from "Low" to "High" power. One complete ON and OFF cycle of power relay B is 22 seconds. The relation between indications on the control panel and the output of the microwave oven is as shown in table.

NOTE: The ON/OFF time ratio does not correspond with the percentage of microwave power since approximately 2 seconds are required for heating of magnetron filament.

2. Inverter Power Supply Circuit NEW H,V

This Inverter Power Supply Circuit supplies 4,000V DC to the magnetron tube from the line voltage,120v 60Hz AC input. functions as the H.V. transformer, the H.V.capacitor and H.V.Diode.

1. The AC input voLtage 120V 60HZ is rectified to DC voltage immediately.
2. DC voltage will be supplied to the switching devices called IGBT. These devices will be switched ON-OFF by the 20 to 40 kHz PWM. (pulse width modulation) signal from the microcomputer in the DPC.
3. This drives the High voltage transformer to increase up to 2,000V AC and approximately 3V AC by means of transformer.
4. Then the half-wave doubler voltage rectifier circuit, consisting of the HV diodes and Capacitors, generates the necessary 4,000V DC needed for the magnetron.
5. Output power of the magnetron tube is always monitored by the signal output from the current transformer built into the inverter ciruit.
6. Then this signal will be fed back to the microcomputer in the DPC to determine operating conditions and output necessary to control PWM signal to the inverter Power Supply to control output power.

3. Inverter Turbo Defrost

When this Auto Control feature is selected and the Start Pad is tapped:

(A) The digital programer circuit determines the power level and cooking time to complete cooking and indicates the operating state in the display window. Table shows the corresponding cooking times for respective serving by categories.

(B) When cooking time the display window has elapsed, the oven tums off automatically by a control signal from the digital programmer circuit.

Variable Power Cooking

POWER SETTING		OUTPUT POWER(%) APPROX.	ON-OFF TIME OF POWER RELAY B (RY1)	
			ON (SEC)	OFF (SEC)
HIGH	P10	100%	22	0
	P9	90%	22	0
	P8	80%	22	0
MEDIUM-HIGH	P7	70%	22	0
MEDIUM	P6	60%	22	0
	P5	50%	22	0
	P4	40%	22	0
MEDIUM-LOW	P3	30%	22	0
	P2	20%	15	7
	P1	10%	8	14
DEFROST	P3	30%	22	0

Inverter Turbo Defrost

SELECTED WEIGHT	COOKING TIME
1.0LB	4 min.28 sec.
6.0LB	25 min.00 sec.

4. Sensor Cooking (NN-S560BFAPH/CPH NN-S560WFAPH/CPH)

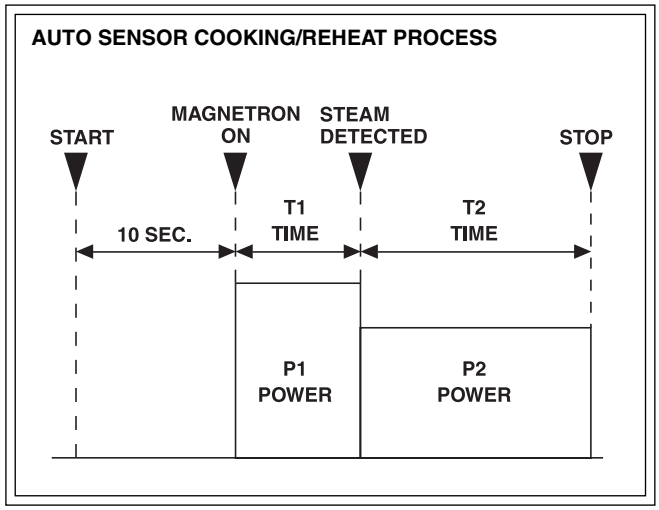
Auto sensor cooking is a revolutionary way to cook by microwave without setting a power level or selecting a time.

All that is necessary is to select an Auto Sensor Program before starting to cook.

Understanding Auto Sensor Cooking

As the food cooks, a certain amount of steam is produced. If the food is covered, this steam builds up and eventually escapes from the container. In Auto Sensor Cooking, a carefully designed instrument, called the steam sensor element, senses this escape of steam. Then, based upon the Auto Sensor Program Selected, the unit will automatically determine the correct power level and the proper length of time it will take to cook the food.

NOTE: Auto Sensor Cooking is successful with the foods and recipes found in the Auto Sensor Cooking Guide. Because of the vast differences in food composition, items not mentioned in the Cooking Guide should be prepared in the microwave oven using power select and time features. Please consult variable Power Microwave cookbook for procedures.



Explanation of the Auto Sensor Cooking process

1) During the first 10 second period there is no microwave activity, and when calculating the T2 time by using the formula below make sure this 10 second is subtracted from the T1 time. In other words T1 time starts at the end of the 10 second period.
2) T1 time... The total amount of time it takes the microwave oven to switch to T2 time after the 10 second period.
3) T2 time... When the steam escapes from the cooking container placed in the oven, the steam sensor detects it and the microprocessor calculates the balance of cooking time. This T2 time is then shown in the display and begins counting down.

   Balance of cooking time (T2 time)

   The balance of cooking time which is called T2 time, can be calculated by the following formula.

   T2 time (in sec.)=T1 time X K factor

NOTE: Remember, the T1 time starts after the 10 second period. The coefficient K is programmed Into the mIcroprocessor memory and they are listed in the following tables along with the P1 and P2 powers.

NOTE: When "More" or "Less" pad is selected, the K factor varles resulting In T2 time to be increased or decreased.

Example of calculating the T2 time

Example 1: If the T1 time is measured to be 2 minutes and 40 seconds after the 10 second period, and the Auto program selected is Frozen Vegetable:

T2 = T1 X K

=2 min. and 40 sec. X 0.1

=160 sec. X 0.1

=16 sec.

Sensor Cooking

Category	P1 Power	P2 Power	K Factor Standard
Frozen Vegetables	HIGH	LOW	0.1

5. Sensor Reheat (NN-S560BFAPH/CPH,NN-S560WF APH/CPH)

Auto Sensor Reheat is a quick and easy way to reheat refrigerator and room temperature foods.

Simply press the reheat pad. There is no need to select power level and cooking time.

NOTE: The Auto Sensor Reheat process is same as Auto Sensor Cooking process.

Sensor Reheat (All Sensor Modeis)

Category	P1 Power	P2 Power	K Factor Standard
Sensor Recheat	HIGH	LOW	0.1

CAUTIONS TO BE OBSERVED WHEN TROUBLESHOOTING

Unlike many other appliances, the microwave oven is high-voltage, high current equipment. Though it is free from danger in ordinary use, extreme care should be taken during repair.

CAUTION
Servicemen should remove their watches whenever working close to or replacing the magnetron.

1. Check the grounding

Do not operate on a 2-wire extension cord. The microwave oven is designed to be used when grounded. It is inoperative, therefore, to make sure it is grounded properly before beginning repair work.

2. Inverter Warnings **NEW H.V.**

DANGER OF HIGH VOLTAGE AND HIGH TEMPERATURE (HOT/LIVE) OF THE INVERTER POWER SUPPLY (U)

This High Voltage Inverter Power Supply circuit supplies very high voltage and very high current for the magnetron tube. Though it is free from danger in ordinary use, extreme care should be taken during repair. As you can see, it looks like a TV flyback transformer, however the current is extremely large and so danger exists because of its high current and high voltages.

The aluminum heat sink is also energized with high voltage (HOT), so do not touch when AC input terminal is connected to the power line because one of the IGBT switching power devices (Collector) is directly connected to the Aluminum heat sink.

The Aluminum heat sink may be HOT from heat energy; therefore, extreme care should be taken during servicing and replacing.

WARNING OF INVERTER POWER SUPPLY (U) GROUNDING

Check the High Voltage Inverter Power Supply circuit grounding. This High Voltage Inverter Power Supply circuit board must have a proper chassis ground by the grounding bracket to the chassis ground; otherwise, this H.V. Inverter circuit board will expose very high voltage and cause extreme DANGER! Be sure to have proper grounding by the grounding plate and screws.

WARNING OF DISCHARGING HIGH VOLTAGE CAPACITORS

Warning about the electric charge in the high voltage capacitors. For about 30 seconds after the oven is turned off, an electric charge remains in the high voltage capacitors in the inverter power supply circuit board.

When replacing or checking parts, remove the power plug from the outlet and short the Inverter output terminal of the magnetron filament terminals to the chassis ground with an insulated handle screwdriver to discharge. Please make sure to touch chassis ground side first then short to the output terminals.

WARNING

There is high-voltage present, with high-current capabilities in the circuits of the primary, and secondary windings, choke coil and heat sink of the Inverter. It is extremely dangerous to work on or near these circuits with oven energized.

DO NOT measure the voltage in the high voltage circuit including filament voltage of magnetron.

WARNING

Never touch any circuit wiring with your hand nor with an insulated tool during operation.

3. When parts must be replaced, remove the power plug from the outlet.

4.When the 18 Amp fuse is blown due to the operation of short switch:

WARNING

When the 18 Amp. fuse if blown due to the operation of short switch, you must replace Primary latch switch and short switch. Also replace power relay B (RY1) when the continuity check reads shorted contacts (1-2).

(A) This is mandatory. Refer to “Measurements and Adjustments” for these switches.

(B) When replacing the fuse, confirm that it has the appropriate rating for these models.

(C) When replacing faulty switches, be sure mounting tabs are not bent, broken or otherwise deficient in their ability to hold the switches.

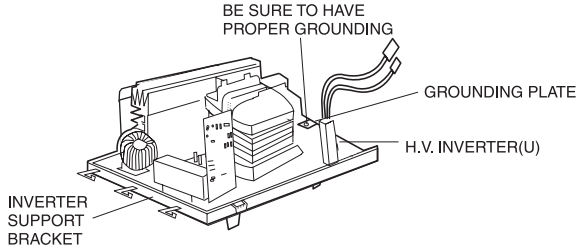
5.Avoid inserting nails, wire, etc. through any holes in the unit during operation.

Never insert a wire, nail or any other metal object through the lamp holes on the cavity or any other holes or gaps, because such objects may work as an antenna and cause microwave leakage.

MAGNETRON FILAMENT TERMINAL

INSULATED HANDLE SCREWDRIVER

Touch chassis side first then short to the terminal of the magnetron filament terminal.



6.Confirm after repair

(A) After repair or replacement of parts, make sure that the screws of the oven, etc. are neither loose nor missing.
Microwaves might leak if screws are not properly tightened.

(B) Make sure that all electrical connections are tight before inserting the plug into the wall outlet.

(C) Check for microwave energy leakage. (Refer to procedure for measuring microwave energy leakage.)

CAUTION

MICROWAVE RADIATION

DO NOT BECOME EXPOSED TO RADIATION FROM THE MICROWAVE GENERATOR OR OTHER PARTS CONDUCTING MICROWAVE ENERGY.

IMPORTANT NOTICE **NEW H.V.**

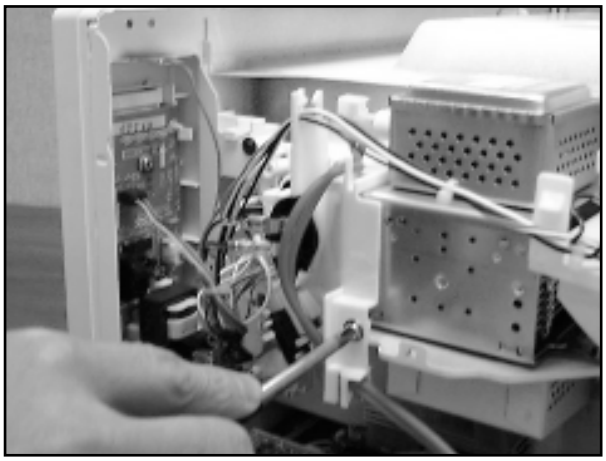
1. The following components have potentials above 250V while the appliance is operating..
   * Magnetron
   * High voltage transformer (Located on Inverter (U))
   * High voltage diodes (Located on Inverter (U))
   * High voltage capacitors (Located on Inverter (U))

   Pay special attention on these portions.
2. When the appliance is operated with the door hinges or magnetron fixed incorrectly, the microwave leakage can reach more than 5mW/cm^2. After repair or exchange, it is very important to check if magnetron and the door hinges are correctly fixed.

DISASSEMBLY AND PARTS REPLACEMENT PROCEDURE

1. Magnetron

(A) Discharge the high voltage capacitors, as mentioned and shown on page 11.
(B) Remove 1 screw holding air guide c to magnetron.
(C) Disconnect 2 high voltage lead wires from magnetron filament terminals.
(D) Remove 4 screws holding the magnetron.
NOTE: After replacement of the magnetron, tighten mounting screws in an X pattern, properly making sure there is no gap between the waveguide and the magnetron to prevent microwave leakage.

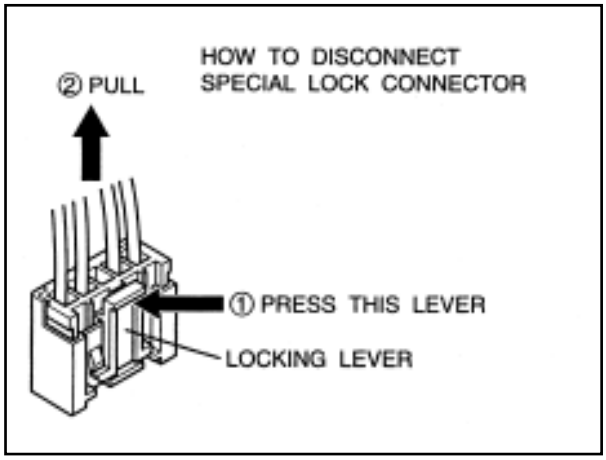


CAUTION

When replacing the magnetron, be sure the antenna gasket is in place.

2. Digital Programmer Circuit (DPC) and membrane key board.

NOTE: Be sure to ground any static electric charge built up on your body before handling the DPC.
(A) Disconnect all connectors from D.P.C.
(B) Slide the escutcheon base upward slightly.
(C) Remove 1 screws holding DPC

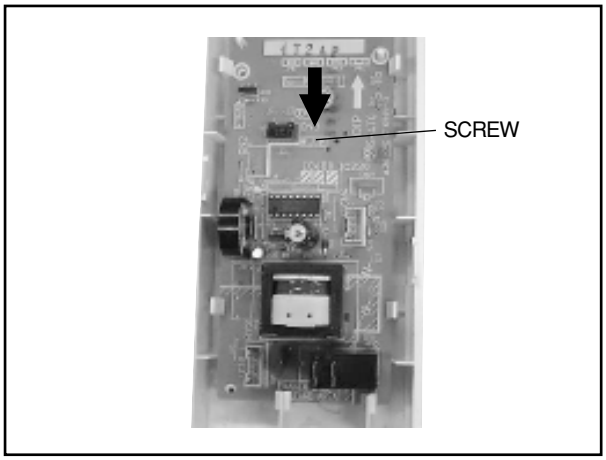


To replace membrane key board

(F) Push the upper part of key board (display window portion) from back of escutcheon base and peel off escutcheon sheet and membrane key board completely from escutcheon base.
NOTE: 1. The membrane key board is attached to the escutcheon base with double faced adhesive tape. Therefore, applying hot air such as using a hair dryer is recommended for smoother removal.
2. When installing new membrane key board, make sure that the surface of escutcheon base is cleaned sufficiently so that any problems (shorted contacts or uneven surface) can be avoided.
3. Alignment position of membrane key board is as follows;
Membrane key board: Right and upper edges
Escutcheon sheet: Right and upper edges

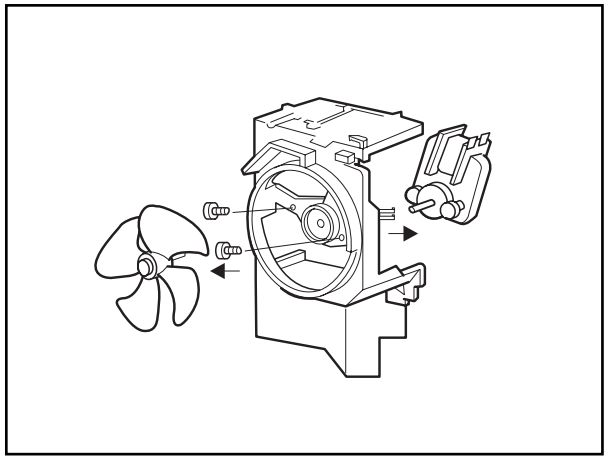
3. Low voltage transformer and/or power relays (RY1, RY2)

NOTE: Be sure to ground any static electric charge built up on your body before handling the DPC.
(A) Using solder wick or a desoldering tool and 30W soldering iron, carefully remove all solder from the terminal pins of the low voltage transformer and/or power relays.
NOTE: Do not use a soldering iron or desoldering tool of more than 30 watts on DPC contacts.
(B) With all the terminal pins cleaned and separated from DPC contacts, remove the defective transformer/power relays and install new transformer/relays making sure all terminal pins are inserted completely. Resolder all terminal contacts carefully.



4. Fan motor

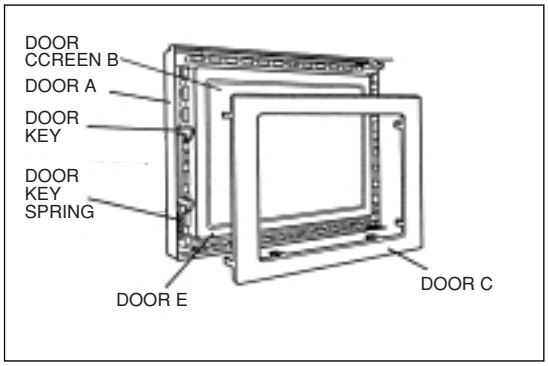
(A) Disconnect 2 lead wires from fan motor terminals.
(B) Remove 1 screw at located on oven attaching orifice assembly.
(C) Remove orifice assembly/Inverter power supply (U) from oven assembly. (Refer page 15)
(D) Remove fan blade from the fan motor shaft by pulling it straight out.
(E) Remove 2 screws holding fan motor to orifice.
(F) Separate the fan motor from the orifice assembly by freeing 2 catch hooks on the orifice assembly.



5. Door assembly

(A) Remove door C from door E by carefully pulling outward starting from upper right hand corner using a flat blade screwdriver.
(B) Separate door E from tabs on door A and remove door A.
(C) Open Door E at the opening angle of approximately 10° (Note: The door cannot be removed if the opening angle is greater than 10°).
(D) Remove the door from its hinges by pushing the door's lower hinge pin upward and out.
(E) Remove door screen B from door A.
(F) Remove door key and door key spring.
(G) When reassembling door hold door E at the opening angle of approximately 10°.
(H) Place the door's lower hinge pin into the bottom hinge hole.
(I) Use your left index finger to support the door's lower hinge pin while guiding the door's upper hinge pin into the top hinge hole.
(J) Lower your finger to seat the door onto the hinges.
(K) Replace other components.
(L) **Door alignment is crucial. If door is misaligned, apply pressure until alignment is achieved.**

After replacement of the defective component parts of the door, reassemble, install, and perform microwave leakage test.



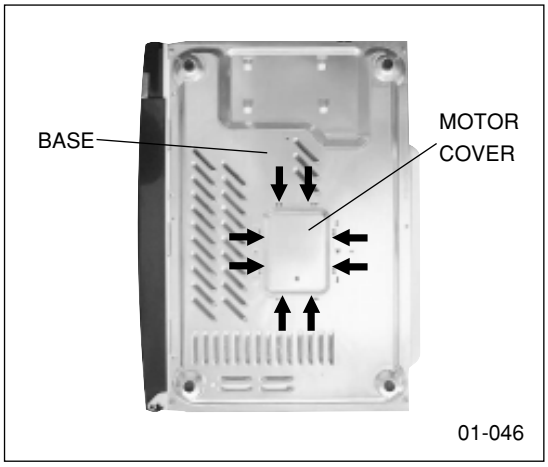
6. Turntable motor

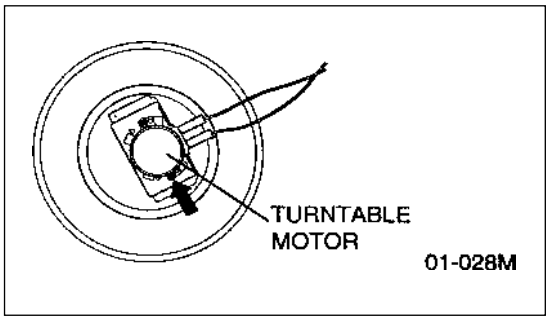
(A) Remove the motor cover by breaking off at the 8 spots indicated by arrows with a cutter or the like. (See Figure)

NOTE: After breaking off the motor cover, make sure that cut-off portions are properly trimmed off or bend to inside so that no sharp edge will expose to outside.

(B) Disconnect 2 lead wires connected to the turntable motor.
(C) Remove the turntable motor by removing 1 screw.

NOTE: After reinstalling the new turntable motor and reconnecting the two lead wires, reinstall the motor cover by rotating it around 180 , tucking the tabs under the base into the 2 provided slots, then screw the single tab to the base using a 4mm X 6mm screw (not provided).

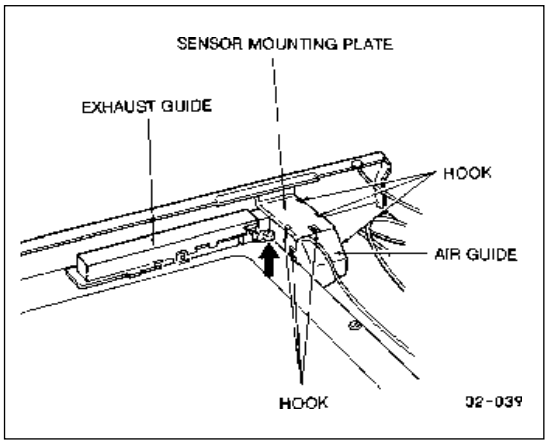


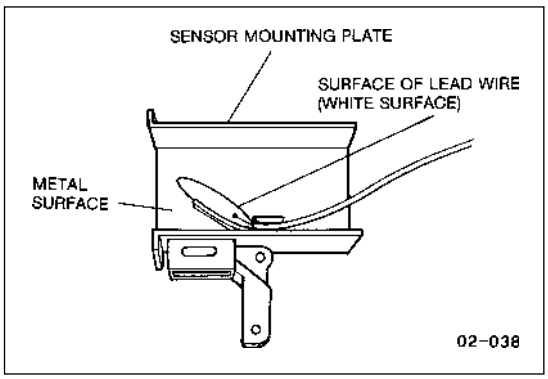


7. Steam Sensor

(A) Remove 1 screw holding steam sensor unit. (indicated by arrows)
(B) Disconnect CN2 connector from digital programmer circuit board.
(C) Remove exhaust guide from steam sensor unit.
(D) Remove catch hooks on sensor mounting plate and air guide.
(E) Remove steam sensor from sensor mounting plate.

NOTE: When installing the steam sensor, make sure that the direction of steam sensor is as shown in figure.





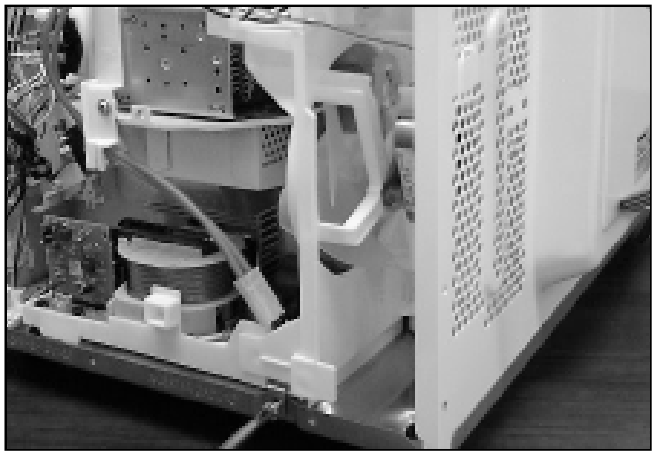
8. Inverter Power Supply (U)

CAUTIONS WHILE REPLACING INVERTER POWER SUPPLY (U)

1. Make sure to leave the grounding plate in its place.
2. Make sure to securely tighten grounding screw from the bottom of chasis (base).
3. Securely connect 3 lead wire connectors.
4. Make sure the heat sink has enough space (gap) from the oven. Take special care not to touch any lead wire to the aluminum heat sink because it is hot.

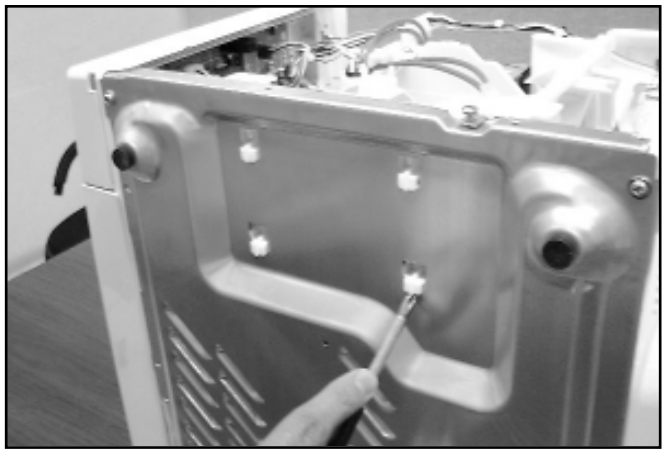
1. Take off outer panel.

2. Remove screw

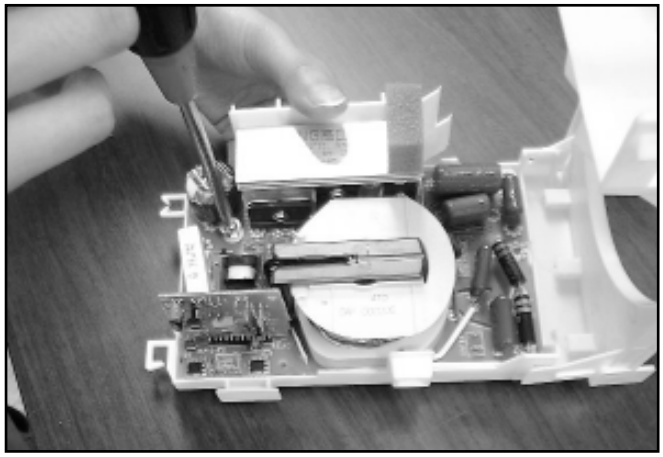


3. Remove screw
4. Disconnect all wires from inverter. Detach turntable wires from inverter bracket.

5. Remove screw and slide oriffice toward you, then lift up and out.



6. Slide four locking of oriffice at the bottom of the base slightly



7. Remove 2 screws holding inverter to inverter bracket.

8. Replace inverter and reassemble to inverter bracket A.
9. Retighten 2 screw
10. Slide and place assembly to the correct location of a completed unit.
11. Push Inverter Assembly until locking tabs are locked.
12. Retighten inverter screws and orifice screws.
13. Reconnet all wires to correct location and redress turntable wires.

COMPONENT TEST PROCEDURE

CAUTION NEW. H.V.

1. High voltage is present at the high voltage terminal of the High Voltage Inverter (U) including aluminum heat sink during any cook cycle.
2. It is neither necessary nor advisable to attempt measurement of the high voltage.
3. Before touching any oven components, or wiring, always unplug the oven from its power source and discharge the high voltage capacitors.

1. Primary Latch Switch, Secondary (Secondary Latch Switch and Power Relay B) Interlocks.

(A) Unplug the lead connectors to Power Relay B and verify continuity of the power relay B 1-2 terminals.
(B) Unplug lead connectors to Primary Latch Switch and Secondary Latch Switch.
(C) Test the continuity of switches at door opened and closed positions with ohm meter (low scale).
Normal continuity readings should be as follows.

	Door Closed	Door Opened
Primary Latch Switch	0 Ω (close)	∞ Ω (open)
Secondary Latch Switch	0 Ω (close)	∞ Ω (open)
Power Relay B	∞ Ω (open)	∞ Ω (open)

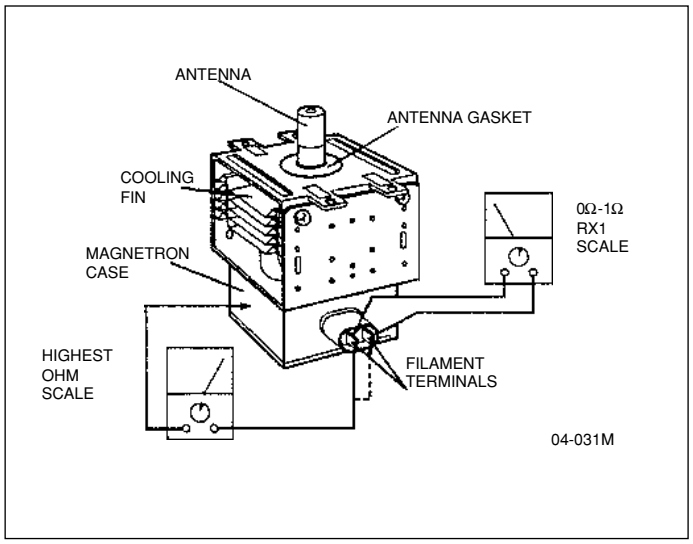
2. Short Switch & Monitor

(A) Unplug lead wires from Inverter Power Supply (U) primary terminals.
(B) Connect test probes of ohm meter to the disconnected leads which were connected to Inverter Power Supply (U).
(C) Test the continuity of short switch with door opened and closed positions using lowest scale of the ohm meter.
Normal continuity readings should be as follows.

Door Opened	Door Closed
0 Ω	∞ Ω

3. Magnetron

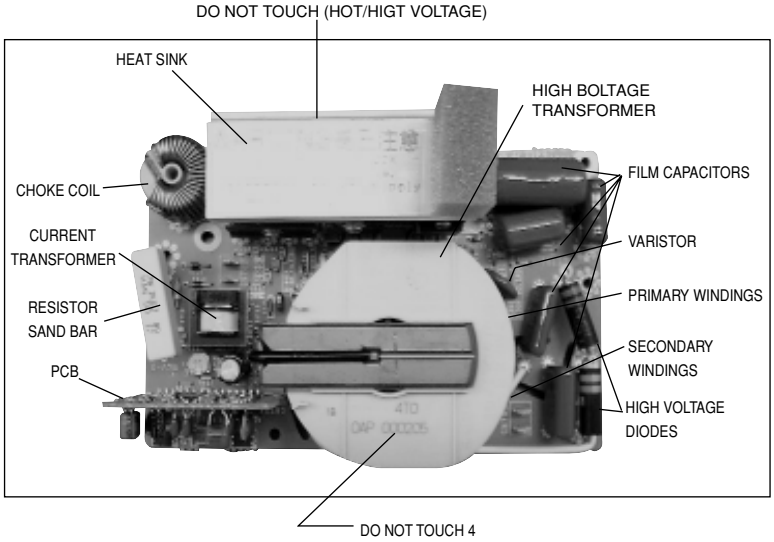
Continuity checks can only indicate an open filament or a shorted magnetron. To diagnose for an open filament or shorted magnetron.
(A) Isolate magnetron from the circuit by disconnecting the leads.
(B) A continuity check across magnetron filament terminals should indicate one ohm or less.
(C) A continuity check between each filament terminal and magnetron case should read open.



4. Membrane key board (Membrane switch assembly)

Check continuity between switch terminals, by tapping an appropriate pad on the key board. The contacts assignment of the respective pads on the key board is as shown in digital programmer circuit.

5. Inverter Power Supply (U)for USA only
DO NOT try to REPAIR this H.V. Inverter power supply (U).Replace as whole H.V. Inverter(U) Unit.



DANGER HIGH VOLTAGE

Test if failure codes of H97 or H98 appears by doing the following procedure. It is recommended to use an AC line input current Ampere meter for testing.

Test 1

A. Program DPC.
   1. Tap Clock
   2. Tap TIMER
   3. Tap START
   4. Tap POWER LEVEL
B. Place 1 liter of water load into oven cavity.
C. Unplug 2 pin H.V. lead wire connector CN703 from magnetron tube.
D. Program oven at High power for 1 minute and press start.
   1. After approximately 15 seconds, oven displays H98 and stops oven.
   2. During oven operation, input current is approximately 1.0 to 1.7A. If both 1 and 2 are OK, please proceed to test 2.

	INPUT AMPERE	FAILURE CODE
Unplug CN703	1.0 to 1.7A	H98

.

Test 2.

Continued from Test 1
A. Unplug 3 pin connector, CN701
B. Set oven at High power for 1 minute and start.
   1. After approximately 27 seconds, oven displays H97 and stops oven.
   2. During oven operation, input current is approximately 0.4 to 0.8A

	INPUT AMPERE	FAILURE CODE
Unplug CN701	0.4 to 0.8A	H97

If both 1 and 2 are OK, the Inverter Power Supply (U) can be determined OK.

6. Steam Sensor and Digital Programmer Circuit

In order to determine if the steam sensor function of the digital programmer circuit is in working order or not, do the following test.

1) Place a water load (150 cc) in the oven.
2) Tap Sensor Reheat pad.
3) Tap Start Pad.
4) Steam Sensor detects steam about 1.5 to 4 minutes after the Start Pad is tapped.
5) T1 time cooking automatically switches to remaining time cooking (T2).
6) The remaining cooking time (T2) appears in display window. If the following cooking time appears, Steam Sensor function is normal.

T1 TIME	T2 TIME (Remaining cooking time)
1 Min. 30 Sec.~4 Min.	8 Sec.~23 Sec.

MEASUREMENTS AND ADJUSTMENTS

WARNING

* For continued protection against radiation hazard, replace only with identical replacement parts(For touch models Part No. ANE6142-1450,Type No. V-16G-3C26-M for Primary latch switch; Part No. A61425180AP, Type No. L-3C2-2 for Secondary latch switch; Part No. A61785180AP, Type No. L-2C2-2 for short switch and Part. No. AEG5J1EG12B/AEG5J1EG18B, Type No. G5J-1-TP for power relay B(RY1))
* When the 18 Amp. fuse is blown due to the operation of the short switch, you must replace power relay B. Primary latch switch and the short switch. Then follow the installation procedures below.
* Interlock switch replacement－In replacing faulty switches, be sure mounting tabs are not bent, broken or otherwise deficient in their ability to hold the switches.
* Refer to schematic diagram to ensure proper connection.

1. Adjustment of Primary latch switch, Secondary latch switch and Short switch.

(A) When mounting Primary latch switch,Secondary latch switch and short switch to door hook assembly, mount the Primary latch switch, the Secondary latch switch and the short switch to the door hook assembly as shown in table.

NOTE: No specific adjustment during installation of Primary latch switch, Secondary latch switch and short switch to the door hook is necessary.

(B) When mounting the door hook assembly to the oven assembly, adjust the door hook assembly by moving it in the direction of arrow in the illustration so that the oven door will not have any play in it. Check for play in the door by pulling the door assembly. Make sure that the latch keys move smoothly after adjustment is completed. Completely tighten the screws holding the door hook assembly to the oven assembly.

(C) Reconnect the short switch and check the continuity of the monitor circuit and all latch switches again by following the components test procedures.

2. Measurement of microwave output

The output power of the magnetron can be determined by performing IEC standard test procedures. However,due to the complexity of IEC test procedures, it is recommended to test the magnetron using the simple method outlined below.

Necessary Equipment:

*1 liter beaker *Glass thermometer

*Wrist watch or stopwatch

NOTE: Check the line voltage under load.Low voltage will lower the magnetron output. Take the temperature readings and heating time as accurately as possible.

(A) Fill the beaker with exactly one liter of tap water.Stir the water using the thermometer and record the beaker's temperature. (recorded as T1).

(B) Place the beaker on the center of glass cook plate. Set the oven for High power and heat it for exactly one minute.

(C) Stir the water again and read the temperature of the beaker. (recorded as T2).

(D) The normal temperature rise at High power position for each model is as shown in table.

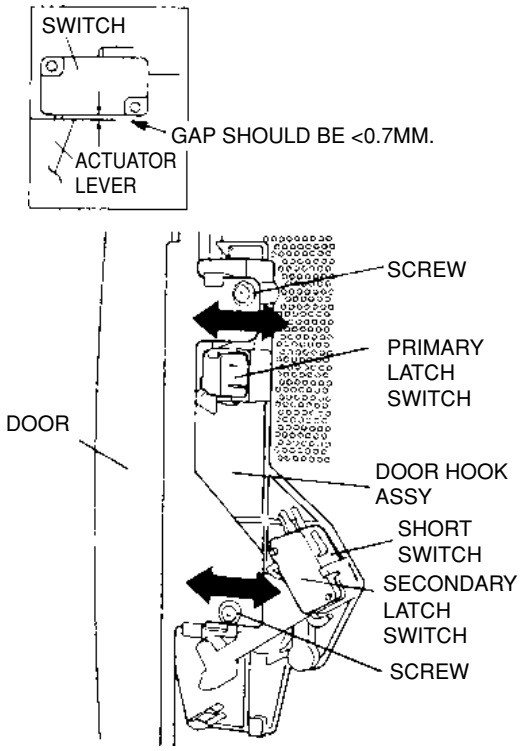


TABLE (1L-1min. test)

RATED OUTPUT	TEMPERATURE RISE
1000~1100W(IEC705-88)	Min. 16.2°F(9°C)
1200~1300W(IEC705-88)	Min. 17.6°F(9.5°C)

PROCEDURE FOR MEASURING MICROWAVE ENERGY LEAKAGE

WARNING

Check for radiation leakage after every servicing. Should the leakage be more than 2 mW/cm² (1mW/cm² for Canada) inform PASC, PSC, or PCI immediately. After repairing or replacing any radiation safety device, keep a written record for future reference, as required by D.H.H.S. and Health and Welfare Canada regulation. This requirement must be strictly observed. In addition, the leakage reading must be recorded on the service repair ticket while in the customer's home.

NOTE: The U.S. Government standard is 5 mW/cm² while in the customer's home. 2mW/cm² stated here is our own voluntary standard. (1mW/cm² for Canada)

1. Equipment

*Electromagnatic radiation monitor
*Glass thermometer 212 °F or 100 °C
*600cc glass beaker

2. Procedure for measuring radiation leakage

Note before measuring.

(1) Do not exceed meter full scale deflection. Leakage monitor should initially be set to the highest scale.

(2) To prevent false readings the test probe should be held by the grip portion of the handle only and moved along the shaded area in Figure no faster than 1 inch/sec (2.5cm/sec).

(3) Leakage with the outer panel removed ..... less than 5mW/cm² .

(4) Leakage for a fully assembled oven with door normally closed ..... less than 2mW/cm² (1mW/cm² for Canada).

(5) Leakage for a fully assembled oven [Before the latch switch (primary) is interrupted] while pulling the door ..... less than 2mW/cm² .

(A) Pour 275 ± 15cc (9ozs ± 1/2oz) of 20° ± 5 °C (68° ± 9 °F) water in a beaker which is graduated to 600cc, and place in the center of the oven.

(B) Set the radiation monitor to 2450MHz and use it following the manufacturer's recommended test procedure to assure correct results.

(C) When measuring the leakage, always use the 2 inch (5cm) spacer supplied with the probe.

(D) Tap the start pad or set the timer and with the magnetron oscillating, measure the leakage by holding the probe perpendicular to the surface being measured.

(1) Measurement with the outer panel removed.

Whenever you replace the magnetron, measure for radiation leakage before the outer panel is installed and after all necessary components are replaced or adjusted. Special care should be taken in measur ing around the magnetron.

WARNING

Avoid contacting any high voltage parts.

(2) Measurements with a fully assembled oven.

After all components, including outer panel are fully assembled, measure for radiation leakage around the door periphery, the door viewing window, the exhaust opening and air inlet openings.

3. Record keeping and notification after measurement

(A) After any adjustment or repair to a microwave oven, a leakage reading must be taken. Record this leakage reading on the repair ticket even if it is zero.

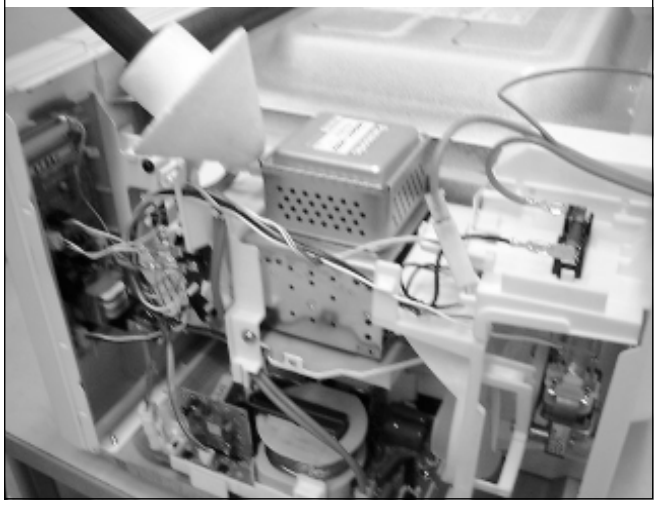
A copy of this repair ticket and the microwave leakage reading should be kept by repair facility.

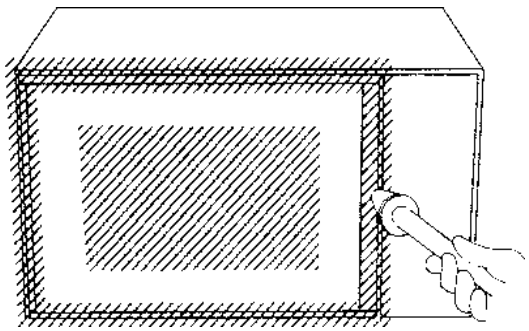
(B) Should the radiation leakage be more than 2 mW/cm² (1mW/cm for Canada) after determining that all parts are in good condition, functioning properly, and genuine replacement parts as listed in this manual have been used, immediately notify PASC, PSC or PCI.

4. At least once a year, have the radiation monitor checked for calibration by its manufacturer.

WARNING

AVOID CONTACTING ANY HIGH VOLTAGE PARTS.





01-035

MOVE PROBE ALONG SHADED AREA(////)AROUND EXHAUST OPENINGS(as shown)AND AROUND AIR INLET OPENING

TROUBLESHOOTING GUIDE

CAUTION

1. Check grounding before checking for trouble.
2. Be careful of high voltage circuit.
3. Discharge high voltage capacitor.
4. When checking the continuity of the switches or the high voltage transformer,disconnect one lead wire from these parts and then check continuity with the AC plug removed. To do otherwise may result in a false reading or damage to your meter. When disconnecting a plastic connector from a terminal, you must hold the plastic connector instead of the lead wire and then disconnect it, otherwise lead wire may be damaged or the connector cannot be removed.
5. Do not touch any parts of the circuitry on the digital programmer circuit, since static electric discharge may damage this control panel.
   Always touch yourself to ground while working on this panel to discharge any static charge in your body.
6. 120V AC is present on the digital programmer circuit (Terminals of power relay's and primary circuit of low voltage transformer). When troubleshooting, be cautious of possible electrical shock hazard.

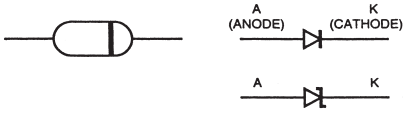
First of all operate the microwave oven following the correct operating procedures in order to find the exact cause of any trouble.

	SYMPTOM	CAUSE	CORRECTIONS
1.	Oven is dead. Fuse is OK. No display and no operation at all.	1. Open or loose lead wire harness 2. Open thermal cutout (Cavity) 3. Open low voltage transformer 4. Defective DPC	Check fan motor when thermal cutout is defective.
2.	No display and no operation at all. Fuse is blown.	1. Shorted lead wire harness 2. Defective primary latch switdh (NOTE 1) 3. Defective short switch (NOTE 1) 4. Defective Inverter Power Supply (U) (Page 18)	Check adjustment of primary, secondary latch switch and short switch including door.
		NOTE 1: All of these switches must be replaced at the same time. Check continuity of power relay (RY1)'s contacts (between 1 and 2) and if it has continuity, replace power relay B (RY-1)'s.	
3.	Oven does not accept key input(Program)	1. Key input is not insequence 2. Open or loose connection of membrane key pad to DPC (Flat cable) 3. Shorted or open membrane key board 4. Defective DPC	Refer to operation procedure. Refer to DPC troubleshooting.
4.	Fan motor turn on when oven is plugged in with door closed.	1. Misadjustment or loose wiring of secondary latch switch 2. Defective secondary latch switch	Adjust door and latch switches.
5.	Timer starts count down but no microwave oscillation. (No heat while oven lamp and fan motor turn on)	1. Off-alignment of latch switches 2. Open or loose connection of high voltage circuit especially magnetron filament circuit NOTE: Large contact resistance will bring lower magnetron filament voltage and causing magnetron to lower output and/or be intermittent. 3. Defective high voltage component HV Inverter Power Supply (u) Magnetron 4. Open or loose wiring of power relay B (RY-1) 5. Defective primary latch switch 6. Defective DPC or power relay B (RY-1)	Adjust door and latch switches. Check high voltage component according to component test procedure and replace if it is defective. Refer to DPC troubleshooting Adjust door and latch switches.
6.	Oven can program but timer does not start countdown.	1. Open or loose wiring of secondary latch switch 2. Off-alignment of secondary latch switch 3. Defective secondary latch switch	
7.	Microwave output is low. Oven takes longer time to cook food.	1. Decrease in power source voltage 2. Open or loose wiring of magnetron filament circuit.(Intermittent oscillation) 3. Aging change of magnetron	Consult electrician
8.	Fan motor turns on and turntable rotates when door is opened.	1. Shorted primary latch switch	

7.	Oven does not operate and return to plugged in mode as soon as start pad is pressed.	1. Defective DPC	Check tighten screws on escutcheon base bracket, D.P.C. board.
8.	Loud buzzing noise can be heard.	1. Loose fan and fan motor	
9.	Turntable motor does not rotate.	1. Open or loose wiring of turntable motor 2. Defective turntable motor	
10.	Oven stops operation during cooking.	1. Open or loose wiring of primary and secondary latch switch 2.Operation of thermal cutout	Adjust door and latch switches.
11.	Oven returns to plugged in mode after 10 seconds elapses on the Auto sensor cooking mode.	1.Open or loose wiring of sensor terminal from DPC 2.Open steam sensor 3.Defective DPC	

HOW TO CHECK THE SEMICONDUCTORS USING AN OHM METER

Diode



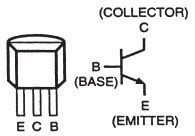
	FORWARD	REVERSE
A-K	SMALL	∞

Transistor

NPN Transistor

2SC·····

2SD·····

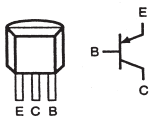


	FORWARD	REVERSE
B-E	SMALL	∞
B-C	SMALL	∞
C-E	∞	∞

PNP Transistor

2SA·····

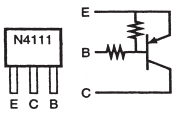
2SB·····



	FORWARD	REVERSE
B-E	SMALL	∞
C-B	SMALL	∞
C-E	∞	∞

Digital Transistor

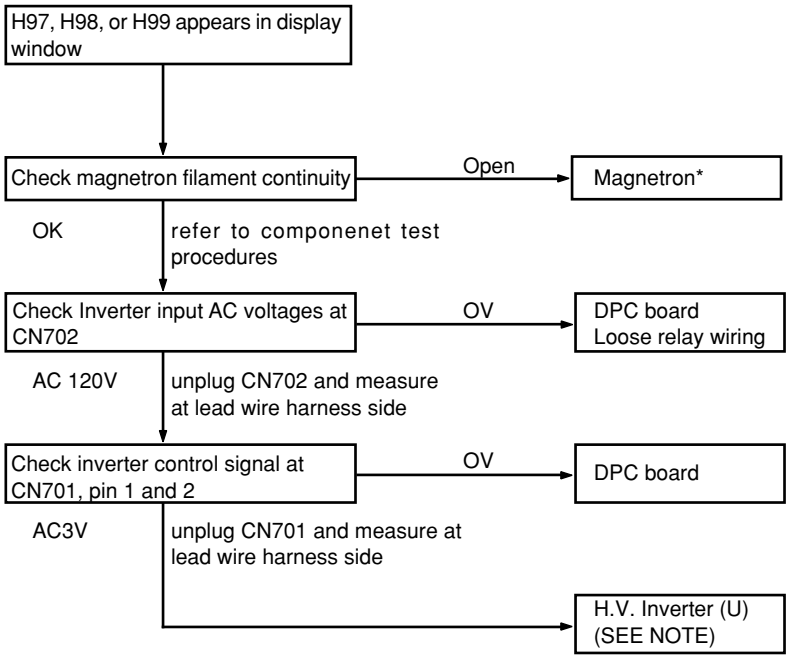
PNP Transistor



	FORWARD	REVERSE
E-B	10kΩ～30kΩ	10kΩ～30kΩ
C-B	50kΩ～90kΩ	∞
C-E	40kΩ～80kΩ	∞

Troubleshooting of Inverter Circuit (U) and Magnetron NEW H.V.

This oven is programmed with a self diagnostics failure code system which will help for troubleshooting. H97, H98, and H99 are the provided failure codes to indicate magnetron and inverter circuit problem areas. This section explains failure codes of H97, H98, and H99. First, you must program the DPC by pressing Clock, Time, Start, Power Level. Program unit for operation. H97, H98, H99 appears in display window a short time after start key is pressed and there is no microwave oscillation.



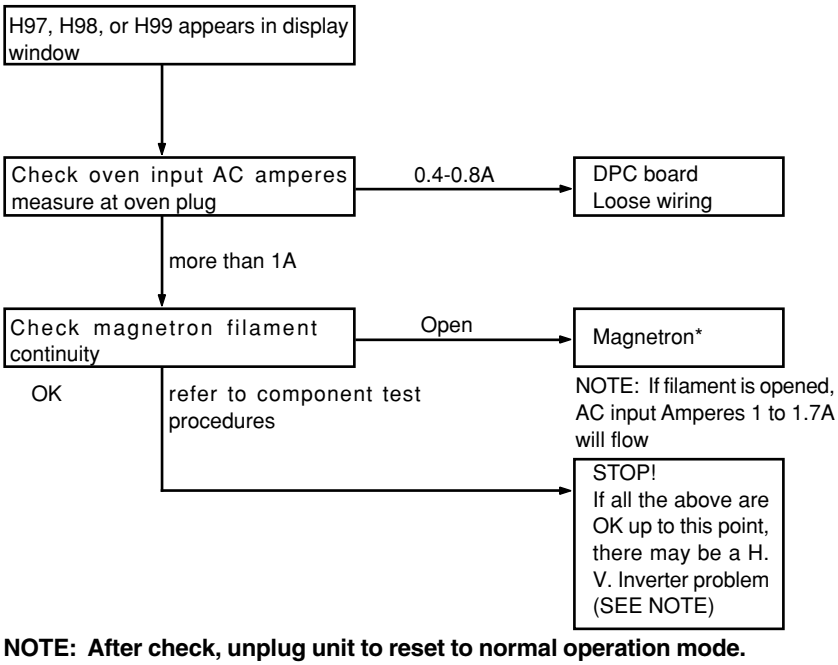
NOTE: After check, unplug unit to reset to normal operation mode.

NOTE: DO NOT try to repair this Inverter Power Supply (U) and also DO NOT RE-ADJUST PRESET VOLUME on the board. It is very dangerous to repair or adjust without sufficient test equipment because this circuit handles very high voltage and very large current. Off alignment of inverter board operation is dangerous. Operating a misaligned Inverter circuit is dangerous due to the very high voltage and current that is produced by this board. Defective boards must be replaced with a new one.

* Check magnetron filament for open or short to casing before proceeding to determine a good magnetron.

Alternate way to troubleshoot oven with AC Ampere meter used

H97, H98, H99 appears in display window a short time after start key is pressed and no microwave oscillation with AC Ampere meter used for troubleshooting


H97, H98, or H99 appears in display window
Check oven input AC amperes measure at oven plug
0.4-0.8A
DPC board
Loose wiring
more than 1A
Check magnetron filament continuity
Open
Magnetron*
OK
refer to component test procedures
NOTE: If filament is opened, AC input Amperes 1 to 1.7A will flow
STOP!
If all the above are OK up to this point, there may be a H. V. Inverter problem (SEE NOTE)

NOTE: After check, unplug unit to reset to normal operation mode.

NOTE: DO NOT try to repair this Inverter Power Supply (U) and also DO NOT

RE-ADJUST PRESET VOLUME on the board. It is very dangerous to repair or adjust without sufficient test equipment because this circuit handles very high voltage and very large current. Off alignment of inverter board operation is dangerous. Operating a misaligned Inverter circuit is dangerous due to the very high voltage and current that is produced by this board. Defective boards must be replaced with a new one.

* Check magnetron filament for open or short to casing before proceeding to determine a good magnetron.

Trouble Related to Digital Programmer Circuit

SYMPTOM	STEP	CHECK	RESULT	CAUSE/CORRECTIONS
No display when oven is first plugged in. Oven is dead.	1	Fuse pattern of DPC	Normal Open (NOTE)	STEP 2 Shorted Circuit of ZNR, L.V.T., Oven Lamp etc. Replace DPC
	2	Low voltage transformer (LVT) secondary voltage	Abnormal 0V Normal	LVT → Step 3
	3	IC-1 pin 8 voltage (Emitter of Q10)	Abnormal Normal = 5V	ZD10, Q10 → Step 4
	4	IC-1 pin 10 voltage (15 pin of IC-220)	Abnormal Normal	IC-220 → IC-1, CX320

NOTE

Procedure of fuse pattern repairing is as follows:

1. When the fuse pattern (PF2) opens.

(1) Remove the jumper wire (PF1).

(2) Insert the removed jumper wire (PF1) to "(PF2)" position and solder it. If both "PF1" and "PF2" fuse patterns are open, please replace DPC.

2. When the fuse pattern (PF4) opens.

(1) Remove the jumper wire (PF3).

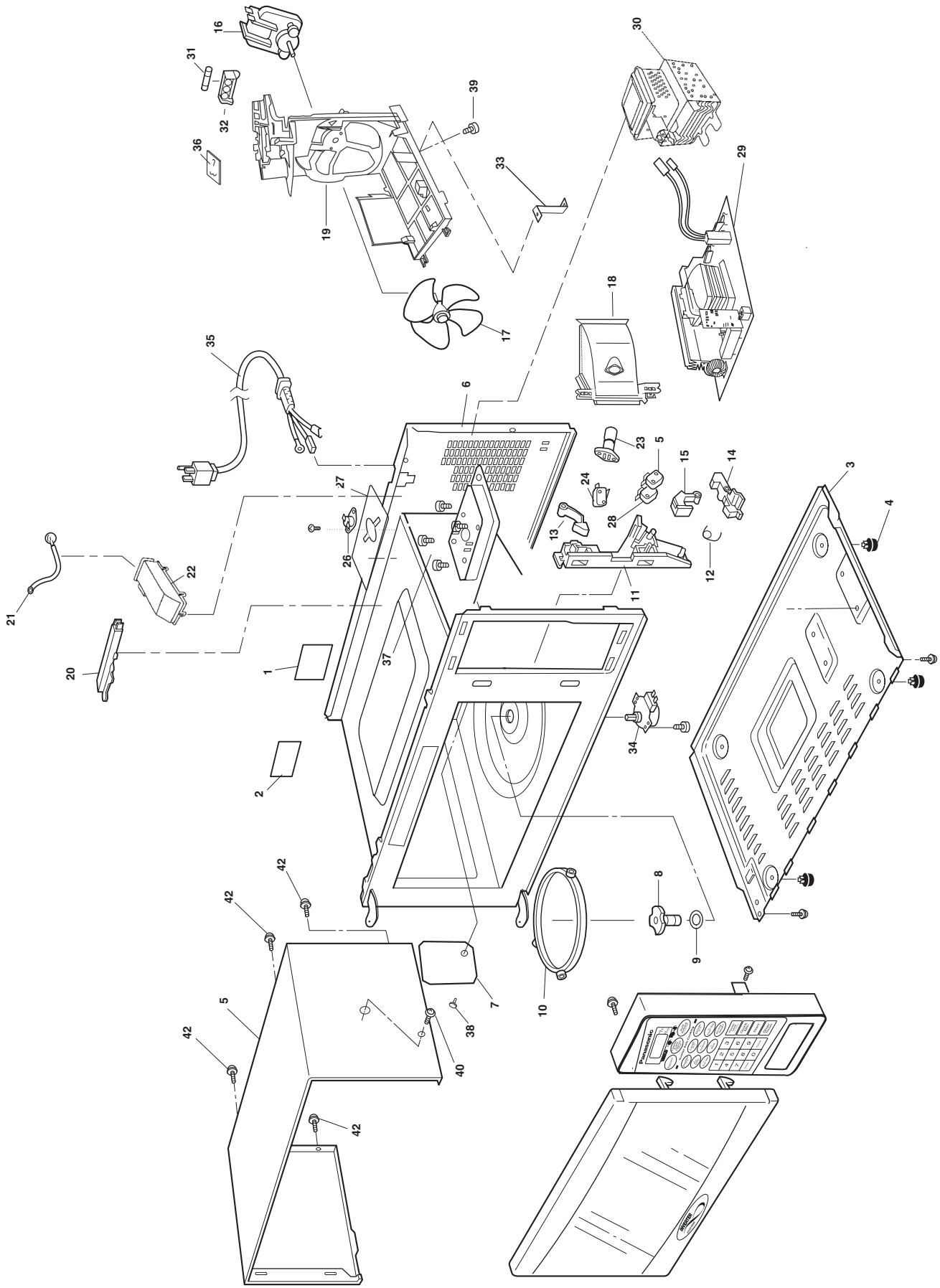
(2) Insert the removed jumper wire (PF3) to "(PF4)" position and solder it. If both "PF3" and "PF4" fuse patterns are open, please replace DPC.

NOTE:* At the time of these repairs, make visual inspection of the varistor for burning damage and examine the transformer with tester for the presence of layer short-circuit (check primary coil resistance).
If any abnormal condition is detected, replace the defective parts.

SYMPTOM	STEP	CHECK	RESULT	CAUSE/CORRECTIONS
No key input	1	Membrane switch continuity	Abnormal	Membrane switch
			Normal	IC-1
No beep sound	1	IC-1 pin 31 voltage	Abnormal	IC-1
			Normal	BZ, IC-220
Power relay A(RY-2) does not turn on even though the program has been set and the start pad is tapped	1	IC-1 pin 32 voltage while operation	Abnormal	IC-1
			Normal = 5V	→ Step 2
	2	Short circuit between pin 6 and pin 16 of IC-220	Still not turn on	RY-2
			RY-2 turns on	IC-220
No microwave oscillation at any power setting	1	IC-1 pin 38 and pin 39 voltages while operation at high power	Abnormal	IC-1
			Normal 5---5V, 15---5V	→ Step 2
	2	Q220 transistor	Abnormal	Q220
			Normal	IC-220, RY-1
Dark or unclear display	1	Replace display and check operation	Normal	DISPLAY
			Abnormal	IC-1
Missing or lighting of unnecessary segment	1	Replace IC-1 and check operation	Normal	IC-1
			Abnormal	DISPLAY
H97/H98 appears in window and oven stops operation. Program High power for 1 minute and conduct following test quickly, unless H97/H98 appears and oven stops. NEW H.V.	1	Unplug CN702(2 pin) connector and measure voltage between terminals	0V	1. Latch Switch 2. DPC/Power Relay
			AC line voltage of 120V	→ Step 2
	2	Unplug CN701(3 pin) connector and measure pin 1 voltage	0V	DPC
			Approx. AC 3V	Magnetron

TO BE CONTINUED FOR SENSOR MODELS				
Auto sensor cooking does not operate normally. (Steam Sensor cooking does not detect steam from foods.)	1	Steam sensor terminal voltage by using high impedance tester (20k Ω/V), when breathe on metal surface of sensor	Abnormal = 0V	Steam sensor
			Normal > 10~30mV	IC-1

EXPLODED VIEW AND PARTS LIST



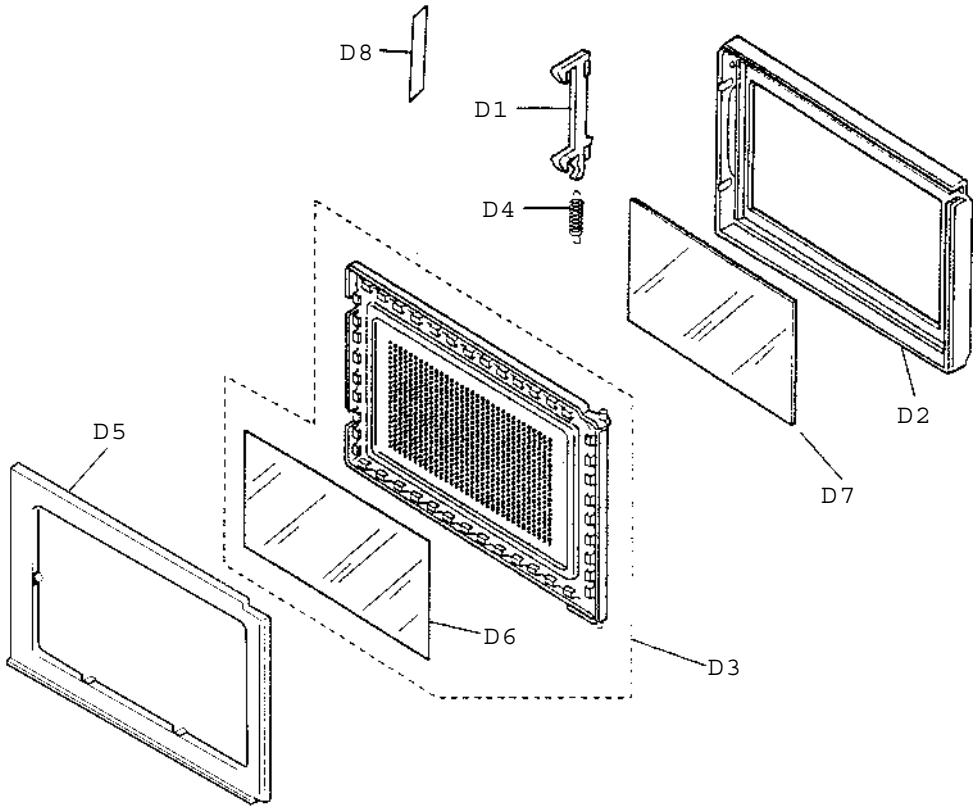
PARTS LIST

NOTE 1: When ordering replacement part(s), please use part number(s) shown in this part list.
Do not use description of the part.
2: Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacture's specified parts.

Ref.No.		Part No.	Part name & Description	Pcs/ set	Remarks
1		F00069660AP	CAUTION LABEL	1	******APH
1		F00067600CP	CAUTION LABEL	1	******CPH
2		F00074T00BAP	NAME PLATE	1	S560BFAPH
2		F00074T00HAP	NAME PLATE	1	S560WFAPH
2		F00074T00BCP	NAME PLATE	1	S560BFCPH
2		F00074T00HCP	NAME PLATE	1	S560WFCPH
2		F00074T10BAP	NAME PLATE	1	S550BFAPH
2		F00074T10HAP	NAME PLATE	1	S550WFAPH
2		F00074T20BAP	NAME PLATE	1	S540BFAPH
2		F00074T20HAP	NAME PLATE	1	S540WFAPH
2		F00074T20BCP	NAME PLATE	1	S540BFCPH
2		F00074T20HCP	NAME PLATE	1	S540WFCPH
2		F00074T30BAP	NAME PLATE	1	L530BFAPH
2		F00074T30HAP	NAME PLATE	1	L530WFAPH
2		F00074T30HCP	NAME PLATE	1	L530WFCPH
2		F00074T40HCP	NAME PLATE	1	L520WFCPH
2		F00074T50HCP	NAME PLATE	1	S510WFCPH
3		F10014T00AP	BASE	1	
4		F10084T00AP	RUBBER FOOT	4	
5		F110D4T00BAP	CABINET BODY (U)	1	****BF*PH
5		F110D4T00HAP	CABINET BODY (U)	1	****WF*PH
6	⚠	F201A4T00AP	OVEN (U)	1	S560*F*PH
6	⚠	F201A4T10AP	OVEN (U)	1	EXCEPT S560*F*PH
7		F20554T00AP	COVER	1	
8		F21314T00AP	PULLY SHAFT	1	
9		ANE2177-F80	WASHER	1	
10		B290D9330AP	ROLLER RING (U)	1	
11	⚠	B3020-1480	DOOR HOOK	1	
12		J3097-1480	LATCH SPRING	1	
13		B3136-1480	HOOK LEVER A	1	
14		B3137-1480	HOOK LEVER B	1	
15		B3138-1480	HOOK LEVER C	1	

Ref.No.		Part No.	Part name & Description	Pcs/ set	Remarks
16		F400A4T00AP	FAN MOTOR	1	AC120V, SINGLE PHASE, 60Hz
17		F40084T00AP	FAN BLADE	1	
18		F40254T00AP	AIR GUIDE A	1	
19		F41444T00AP	ORIFICE	1	
20		F64505540AP	EXHAUST GUIDE B	1	S560*F*PH
21		A707S4T00AP	STEAM SENSOR	1	S560*F*PH
22		F65434T00AP	SENSOR BRACKET C	1	S560*F*PH
23		F612E9660AP	INCANDESCENT LAMP(U)	1	125V, 60Hz, 20W
24	⚠	ANE6142-1450	MICROSWITCH B	1	(V-16G-3C25L)
25	⚠	J61414T00AP	MICROSWITCH A	1	(D3V-16G-3C25)
26	⚠	F61454050AP	THERMAL CUTOUT	1	120°C, ******CPH
27		F66264T00CP	THERMAL CUTOUT MOUNT	1	******CPH
28	⚠	A61785180AP	MICROSWITCH C	1	(SHORT SWITCH) (D3V-1G-2C25)
29	⚠	A606Y4T00AP	H.V.INVERTER (U)	1	
30	⚠	2M261-M32F	MAGNETRON	1	S560*FAPH, S550*FAPH
30	⚠	2M261-M32G	MAGNETRON	1	S560*FCPH
30	⚠	2M258-M32F	MAGNETRON	1	S540*FAPH, L530*FAPH
30	⚠	2M258-M32G	MAGNETRON	1	S540*FCPG, L530WFCPH,L520WFCPH,S510WFCPH
31	⚠	B62308250AP	FUSE	1	18A/120V,60Hz
32		B62314000AP	FUSE HOLDER	1	******APH
33		F61844T00AP	GROUNDING PLATE	1	
34		B63264080AP	TURNTABLE MOTOR	1	
35	⚠	F900C9660AP	AC CORD W/PLUG	1	******APH
35	⚠	F900C9660CP	AC CORD W/PLUG	1	******CPH
36		A692Y4T00CP	NOISE FILTER (U)	1	******CPH
37		XTWANE+10RU	SCREW	4	FOR MAGNETRON
38		XST4+5VS	SCREW	1	FOR COVER
39		XYD4+EE12F	SCREW	1	FOR H.V.INVERTER EARTH
40		XTCA4+12AFK	SCREW	1	FOR CABINET BODY SIDE

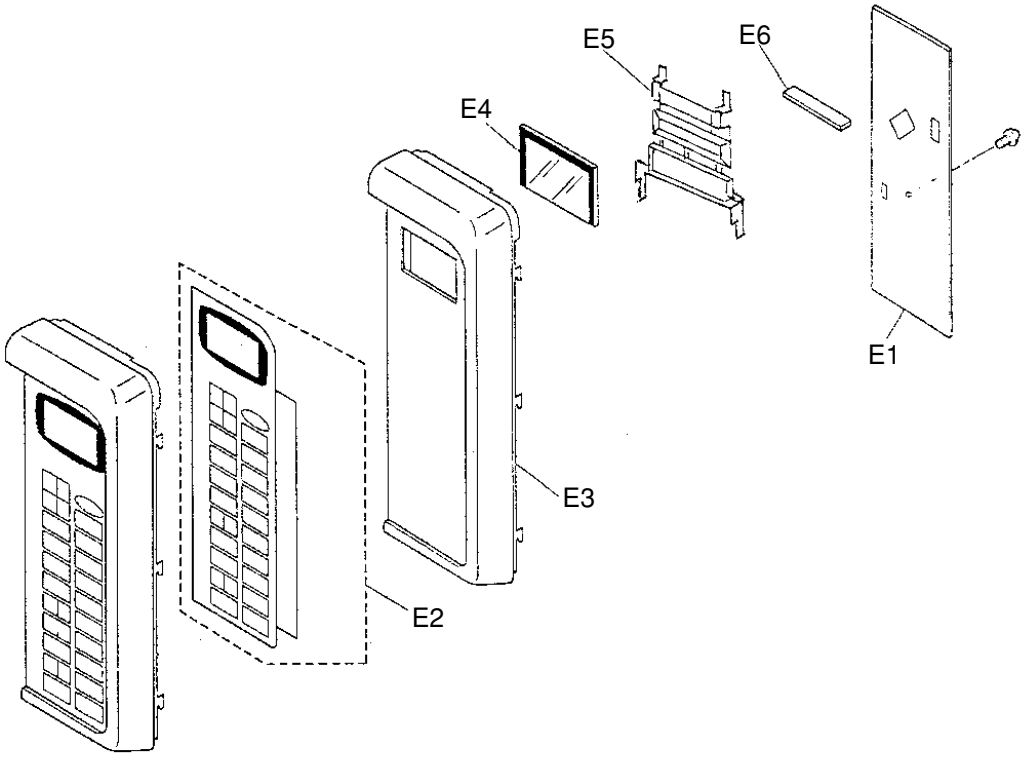
DOOR ASSEMBLY



(S-4T0)

Ref.No.		Part No.	Part name & Description	Pcs/ set	Remarks
D1		B3018-1480	DOOR KEY #A	1	
D2	⚠	F30014T00BAP	DOOR A	1	****BF*PH
D2	⚠	F30014T00HAP	DOOR A	1	****WF*PH
D3	⚠	F302K4T00AP	DOOR E (U)	1	
D4		B30214000AP	DOOR KEY SPRING	1	
D5	⚠	F30854T00AP	DOOR C	1	
D6	⚠	F31454T00AP	DOOR SCREEN A	1	
D7		F31464T00BAP	DOOR SCBEEN B	1	****BF*PH
D7		F31464T00HAP	DOOR SCREEN B	1	****WF*PH
D8		B02454180AP	DHHS LABEL	1	*****FAPH
D8		B04114180CP	CSA LABEL	1	*****FCPH

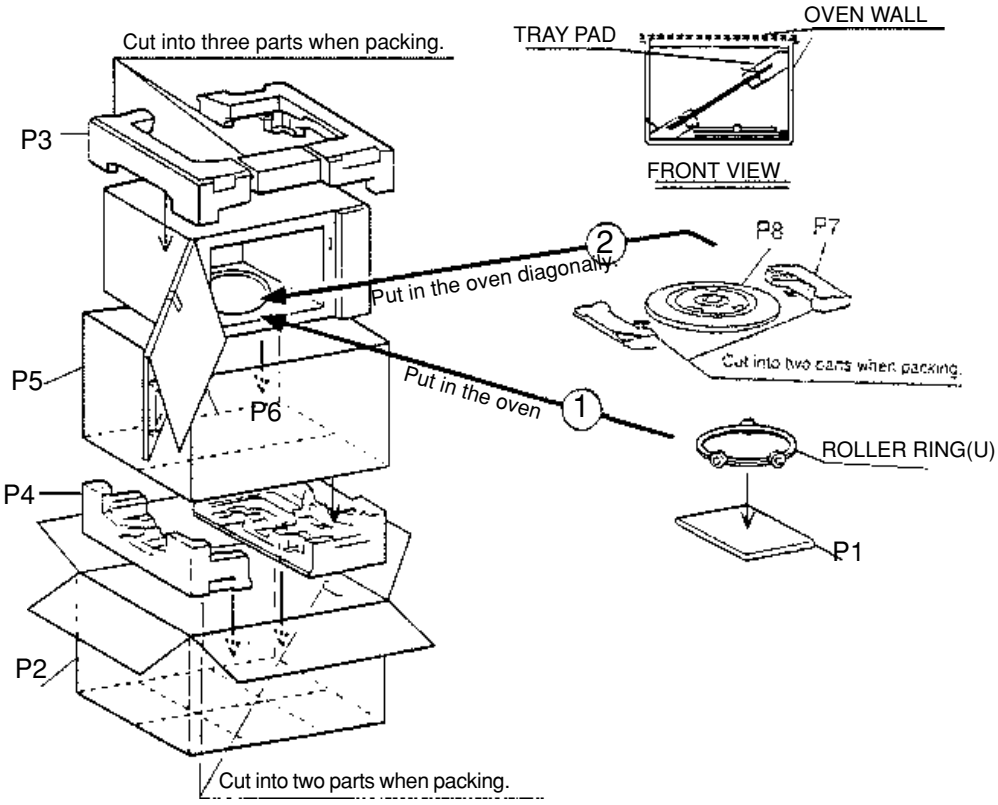
ESCUTHEON BASE ASSEMBLY



(S-4T0)

Ref.No.		Part No.	Part name & Description	Pcs/ set	Remarks	
E1		F603L4T00AP	D.P.CIRCUIT	1	S560BFAPH/S560WFAPH	RTL (W/COMPONENT)
E1		F603L4T00CP	D.P.CIRCUIT	1	S560BFCPH/S560WFCPH	RTL (W/COMPONENT)
E1		F603L4T10AP	D.P.CIRCUIT	1	S550BFAPH/S550WFAPH	RTL (W/COMPONENT)
E1		F603L4T20AP	D.P.CIRCUIT	1	S540BFAPH/S540WFAPH	RTL (W/COMPONENT)
E1		F603L4T20CP	D.P.CIRCUIT	1	S540BFCPH/S540WFCPH	RTL (W/COMPONENT)
E1		F603L4T30AP	D.P.CIRCUIT	1	L530BF/WFAPH	RTL (W/COMPONENT)
E1		F603L4T30CP	D.P.CIRCUIT	1	L530WF/L520WFCPH	RTL (W/COMPONENT)
E1		F603L4T50CP	D.P.CIRCUIT	1	S510WFCPH	RTL (W/COMPONENT)
E2		F603Y4T00BAP	MEMBRANE SWITCH (U)	1	S560BFAPH	
E2		F630Y4T00HAP	MEMBRANE SWITCH (U)	1	S560WFAPH	
E2		F630Y4T00BCP	MEMBRANE SWITCH (U)	1	S560BFCPH	
E2		F630Y4T00HCP	MEMBRANE SWITCH (U)	1	S560WFCPH	
E2		F630Y4T10BAP	MEMBRANE SWITCH (U)	1	S550BFAPH	
E2		F630Y4T10HAP	MEMBRANE SWITCH (U)	1	S550WFAPH	
E2		F630Y4T20BAP	MEMBRANE SWITCH (U)	1	S540BFAPH/S540BFCPH	
E2		F630Y4T20HAP	MEMBRANE SWITCH (U)	1	S540WFAPH/S540WFCPH	
E2		F630Y4T30BAP	MEMBRANE SWITCH (U)	1	L530BFAPH	
E2		F630Y4T30HAP	MEMBRANE SWITCH (U)	1	L530WFAPH/L530WFCPH	
E2		F630Y4T40HCP	MEMBRANE SWITCH (U)	1	L520WFCPH	
E2		F630Y4T50HCP	MEMBRANE SWITCH (U)	1	S510WFCPH	
E3		F80344T00BAP	ESCUTCHEON BASE	1	S560BFAPH/S550BFAPH/S540BFAPH/L530BFAPH	
E3		F80344T00HAP	ESCUTCHEON BASE	1	S560WFAPH/S550WFAPH/S540WFAPH/L530WFAPH	
E3		F80344T50BCP	ESCUTCHEON BASE	1	S560WFCPH/S540BFCPH	
E3		F80344T50HCP	ESCUTCHEON BASE	1	S560WFCPH/S540WFCPH/L530WFCPH/L520WFCPH/S510WFCPH	
E4		AEDDRCD4T0AP	DISPLAY	1		
E5		F66174T00AP	DISPLAY TUBE COVER	1		
E6		A67004T00AP	RUBBER CONNECTOR	1		

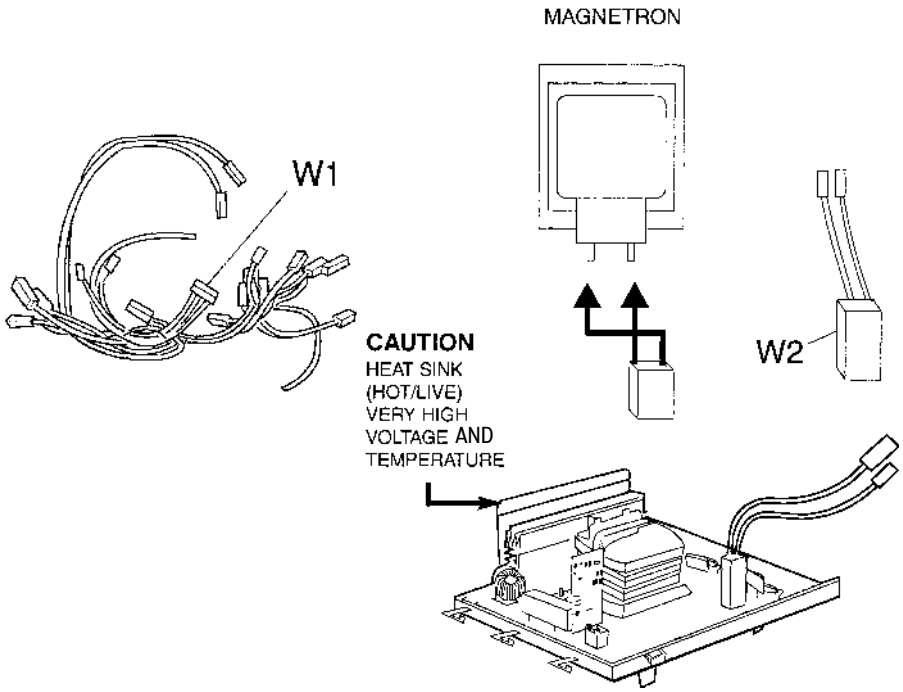
PACKING AND ACCESORIES



(S-4T0)

Ref.No.		Part No.	Part name & Description	Pcs/ set	Remarks
P1		F00034T00AP	INSTRUCTION MANUAL	1	S560BFAPH/S560WFAPH
P1		F00034T00CP	INSTRUCTION MANUAL	1	S560BFCPH/S560WFCPH
P1		F00034T10AP	INSTRUCTION MANUAL	1	S550BFAPH/S550WFAPH
P1		F00034T20AP	INSTRUCTION MANUAL	1	S540BF/WFAPH,L530BF/WFAPH
P1		F00034T20CP	INSTRUCTION MANUAL	1	S540BFCPH/S540WFCPH
P1		F00034T30CP	INSTRUCTION MANUAL	1	L530WFCPH
P1		F00034T40CP	INSTRUCTION MANUAL	1	L520WFCPH
P1		F00034T50CP	INSTRUCTION MANUAL	1	S510WFCPH
P2		F01024T00BAP	PACKING CASE,PAPER	1	S560BFAPH
P2		F01024T00HAP	PACKING CASE,PAPER	1	S560WFAPH
P2		F01024T00BCP	PACKING CASE,PAPER	1	S560BFCPH
P2		F01024T00HCP	PACKING CASE,PAPER	1	S560WFCPH
P2		F01024T10BAP	PACKING CASE,PAPER	1	S550BFAPH
P2		F01024T10HAP	PACKING CASE,PAPER	1	S550WFAPH
P2		F01024T20BAP	PACKING CASE,PAPER	1	S540BFAPH
P2		F01024T20HAP	PACKING CASE,PAPER	1	S540WFAPH
P2		F01024T20BCP	PACKING CASE,PAPER	1	S540BFCPH
P2		F01024T20HCP	PACKING CASE,PAPER	1	S540WFCPH
P2		F01024T30BAP	PACKING CASE,PAPER	1	L530BFAPH
P2		F01024T30HAP	PACKING CASE,PAPER	1	L530WFAPH
P2		F01024T30HCP	PACKING CASE,PAPER	1	L530WFCPH
P2		F01024T40HCP	PACKING CASE,PAPER	1	L520WFCPH
P2		F01024T50HCP	PACKING CASE,PAPER	1	S510WFCPH
P3		F01044T00AP	UPPER FILLER	1	
P4		F01054T00AP	LOWER FILLER	1	
P5		B01068290AP	P.E.BAG	1	
P6		B01075640AP	DOOR SHEET	1	
P7		F01134T00AP	TRAY STYROL	1	
P8		A06014T00AP	COOKING TRAY	1	

WIRING MATERIAL



(S-4T0)

Ref.No.		Part No.	Part name & Description	Pcs/ set	Remarks
W1		F030A4T20AP	LEAD WIRE HARNESS	1	******APH
W1		F030A4T00CP	LEAD WIRE HARNESS	1	******CPH
W2		F030E4T00AP	H.V. LEAD WIRE	1	******APH
W2		F030E4T00CP	H.V. LEAD WIRE	1	******CPH

DIGITAL PROGRAMMER CIRCUIT

(NN-S560BFAPH/CPH,S560WFAPH/CPH)

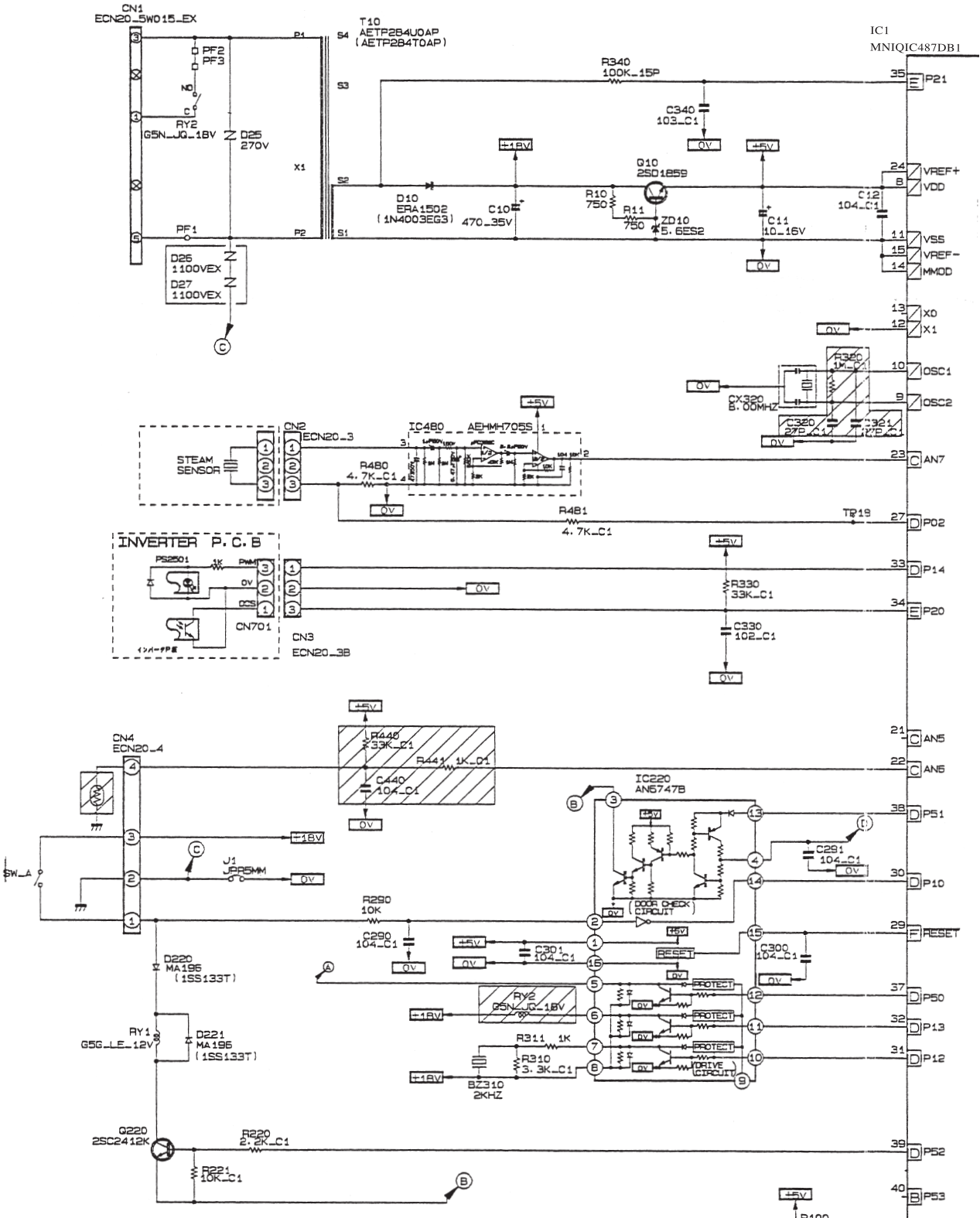
PARTS LIST

Ref.No.		Part No.	Part name & Description	Pcs/ Set	Remarks
BZ310		AEFB22EP20TL	BUZZER	1	2.0KHz
C12,C290,C291,C300,C301		AECUB2F104ZK	CAPACITOR	5	0.1μF/25V
C330		AECUB5C102KK	CAPACITOR	1	0.1μF/50V
C340		AECUB5F103ZK	CAPACITOR	1	0.01μF/50V
C10		ECEA1VM471B	ELECTROLYTIC CAPACITOR A	1	470μF/35V
C11		ECEA1CKA100B	ELECTROLYTIC CAPACITOR A	1	10μF/16V
CN1		AEEMXF01505W	CONNECTOR	1	
CN2		AEEMMF00703W	CONNECTOR	1	
CN3		AEEMXF00703B	CONNECTOR	1	
CN4		AEEMXF00F04W	CONNECTOR	1	
CX320		AEFOS800MG06	CERAMIC RESONATOR	1	6.8MHz
D180,D181,D182,D183		AESQSML210MT	LED	4	
D10		AESSIN4003E	DIODE,SI	1	
D40,D41,D220,D221		MA196-(TA5)	DIODE,SI	4	
D25		AERZ271NS10D	VARISTOR	1	
D26,27		AERZB00NS10D	VARISTOR	2	
IC1		MN101C487DB1	L.S.I	1	
IC220		AN6747B	IC	1	
Q181,Q40,Q220		2SC2412KT146	TRANSISTOR	3	
Q10,Q180		2SD1859TV2Q	TRANSISTOR	2	
R100,R101,R102,R221		AERJ3GSYJ103	RESISTOR	4	10K,1/16W,50%
R40,R41,R42,R43,44,R45, R46,R47,R48		AERJ3GSYJ104	RESISTOR	9	100K,1/16W,50%
R49		AERJ3GSYJ154	RESISTOR	1	150K,1/16W,5%
R220		AERJ3GSYJ222	RESISTOR	1	2.2K,1/16W,5%
R310		AERJ3GSYJ332	RESISTOR	1	3.3K,1/16W,5%
R330		AERJ3GSYJ333	RESISTOR	1	3.3K,1/16W,5%
R181		AERJ3GSYJ360	RESISTOR	1	36Ω,1/4W,5%
R480,R481		AERJ3GSYJ472	RESISTOR	2	4.7K,1/4W,5%
R311		RD16ST102J	RESISTOR	1	1K,1/4W,5%
R180,R290		RD16ST103J	RESISTOR	2	10K,1/4W,5%
R340		RD16ST104J	RESISTOR	1	100K,1/4W,5%
R10,R11		RD16ST751J	RESISTOR	2	750Ω,1/4W,5%
RY1		AEGG5G1A12	POWER RELAY	1	
IC480		AEHMH705S	SENSOR IC	1	
T10		AETP284T0AP	LOW VOLTAGE TRANSFORMER	1	
ZD10		AESZMTAJ5R6B	ZENER DIODE	1	

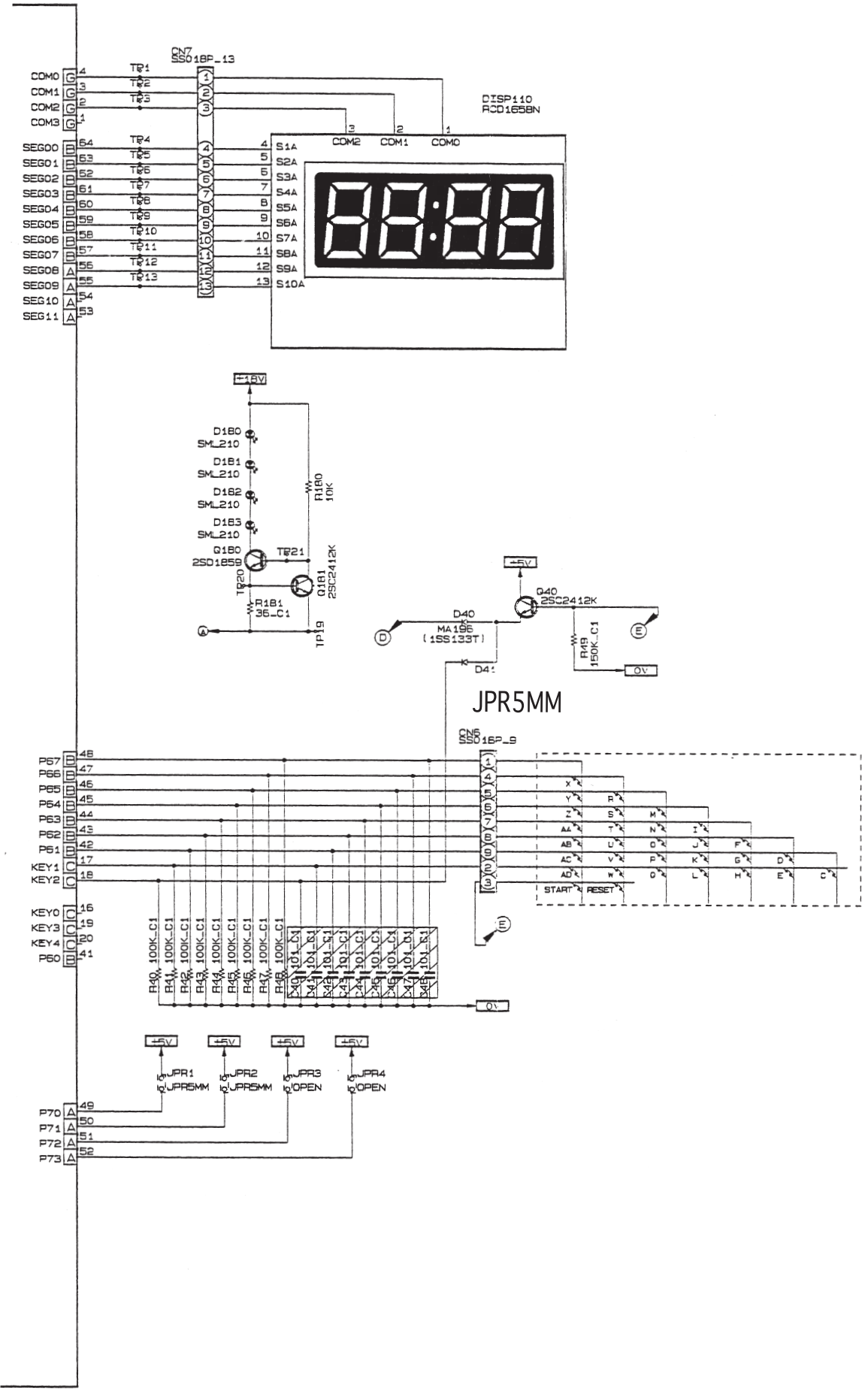
DIGITAL PROGRAMMER CIRCUIT (NN-S530BFAPH/CPH,S540BFAPH/CPH,S540WFAPH/CPH,L530BFAPH/CPH, L530WFAPH/CPH,L520WFAPH/CPH,L510WFAPH/CPH)

PARTS LIST

Ref.No.		Part No.	Part name & Description	Pcs/ Set	Remarks
BZ310		AEFB22EP20TL	BUZZER	1	2.0KHz
C12,C290,C291,C300,C301		AECUB2F104ZK	CAPACITOR	5	0.1MF/25V
C330		AECUB5C102KK	CAPACITOR	1	0.1MF/50V
C340		AECUB5F103ZK	CAPACITOR	1	0.01MF/50V
C10		ECA1VM471B	ELECTROLYTIC CAPACITOR AL	1	470MF/35V
C11		ECEA1CKA100B	ELECTROLYTIC CAPACITOR AL	1	10MF/16V
CN1		AEEMXF01505W	CONNECTOR	1	
CN3			CONNECTOR	1	
CN4		AEEMXF00F04W	CONNECTOR	1	
CX320		AEFOS800MG06	CERAMIC RESONATOR	1	6.8MHz
D180,D181,D182,D183		AESQSML210MT	LED	4	
D10		AESSIN4003E	DIODE,SI	1	
D40,D41,D220,D221		MA196-(TA5)	DIODE,SI	4	
D25		AERZ271NS10D	VARISTOR	1	
IC1		MN101C487DB1	L.S.I	1	
IC220		AN6747B	IC	1	
Q181,Q40,Q220		2SC2412KT146	TRANSISTOR	3	
Q10,Q180		2SD1859TV2Q	TRANSISTOR	2	
R100,R101,R102,R221		AERJ3GSYJ103	RESISTOR	4	10K,1/16W,5%
R40,R41,R42,R43,R44,R45, R46,R47,R48		AERJ3GSYJ104	RESISTOR	9	100K,1/16W,5%
R49		AERJ3GSYJ154	RESISTOR	1	150K,1/16W,5%
R220		AERJ3GSYJ222	RESISTOR	1	2.2K,1/16W,5%
R310		AERJ3GSYJ332	RESISTOR	1	3.3K,1/16W,5%
R330		AERJ3GSYJ333	RESISTOR	1	3.3K,1/16W,5%
		AERJ3GSYJ360	RESISTOR	1	36Ω,1/4W,5%
		RD16ST102J	RESISTOR	1	1K,1/4W,5%
R180,R290		RD16ST103J	RESISTOR	2	10K,1/4W,5%
R340		RD16ST104J	RESISTOR	1	100K,1/4W,5%
R10,R11		RD16ST751J	RESISTOR	2	750Ω,1/4W,5%
RY1		AEGG5G1A12	POWER RELAY	1	
T10		AETP284T0AP	LOW VOLTAGE TRANSFORMER	1	
ZD10		AESZMTZJ5R6B	ZENER DIODE	1	



P. C. B. No.	JPR1	JPR2	JPR3	JPR4	D26, D27
F603L4T00AP	SHORT	SHORT	OPEN	OPEN	×
F603L4T00CP	SHORT	OPEN	OPEN	OPEN	1100VEX


CN7
SS018P_13
COM0
COM1
COM2
COM3
SEG00
SEG01
SEG02
SEG03
SEG04
SEG05
SEG06
SEG07
SEG08
SEG09
SEG10
SEG11
DISP110
ACD1658N
COM2
COM1
COM0
S1A
S2A
S3A
S4A
S5A
S6A
S7A
S8A
S9A
S10A
+18V
D180
SML_210
D181
SML_210
D182
SML_210
D183
SML_210
R180
10K
Q180
2SD1859
Q181
2SC2412K
R181
36_C1
+5V
Q40
2SC2412K
D40
MA196
(1SS133T)
R49
150K_C1
0V
JPR5MM
CN6
SS016P_9
P67
P66
P65
P64
P63
P62
P61
KEY1
KEY2
KEY0
KEY3
KEY4
P60
START
RESET
R40 100K_C1
R41 100K_C1
R42 100K_C1
R43 100K_C1
R44 100K_C1
R45 100K_C1
R46 100K_C1
R47 100K_C1
R48 100K_C1
C40 101_C1
C41 101_C1
C42 101_C1
C43 101_C1
C44 101_C1
C45 101_C1
C46 101_C1
C47 101_C1
C48 101_C1
JPR1
JPR5MM
JPR2
JPR5MM
JPR3
OPEN
JPR4
OPEN
P70
P71
P72
P73

Model for Latin America & Mexico

MODELS	RPH	
	Mexico	Latin America
NN-S540BF/WF		○
NN-540BF/WF	○	○

* This product is based on NN-S540BF/WF APH model, the different parts are listed as followings:
* Any serviceman who has any quiries or order service parts, please contact own area's service company

Ref.No.		Part No.	Part name & Description	Pcs/ Set	Remarks
2		F00074T20BRP	NAME PLATE	1	NN-S540BF
2		F00074T20HRP	NAME PLATE	1	NN-S540WF
2		F00074T70BRP	NAME PLATE	1	NN-540BF
2		F00074T70HRP	NAME PLATE	1	NN-540WF
E1		F603L4T70RP	D.P.CIRCUIT	1	NN-S540BF/WF, NN-540BF/WF
E2		F603Y4T20BAP	MEMBRANE SWITCH(U)	1	NN-S540BF
E2		F603Y4T20HAP	MEMBRANE SWITCH(U)	1	NN-S540WF
E2		F603Y4T70BRP	MEMBRANE SWITCH(U)	1	NN-540BF
E2		F603Y4T70HRP	MEMBRANE SWITCH(U)	1	NN-540WF
P1		F00034T20RP	INSTRUCTION MANUAL	1	NN-S540BF/WF, NN-540BF/WF
P2		F01024T20BAP	PACKING CASE, PAPER	1	NN-S540BF
P2		F01024T20HAP	PACKING CASE, PAPER	1	NN-S540WF
P2		F01024T70BRP	PACKING CASE, PAPER	1	NN-540BF
P2		F01024T70HRP	PACKING CASE, PAPER	1	NN-540WF

5/00
S-4T0
S-4T1
S-4T2
S-4T3
S-4T4
S-4T5
Printed in China